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ABSTRACT

Volume two of the two-volume report on the operations of the Educational Information Network (EIN) is made up of a miscellany of the publications of EIN. It includes the draft edition of the Documentation Standards Handbook, various articles, memos, forms, and so forth, presented in strictly chronological order. EIN was designed to coordinate the sharing of computer programs and computing resources among colleges, universities, and educational service institutions across the country. (JY)

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FINAL REPORT
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EIN PUBLICATIONS

Volume II of II Volumes

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June 1972

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
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U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

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EDUCOM
EIN PROJECT
Account Initiation

PAYMENT FOR THE JOBS RUN UNDER THIS ACCOUNT NUMBER IS GUARANTEED.

EIN Acct. 01100

Date____________________

DO NOT WRITE IN THIS COLUMN

EIN VERIFICATION:

By____________________

Date____________________

User Ref. No.____________________

TO BE FILLED IN BY EIN TECHNICAL REPRESENTATIVE

____
RESOURCE INSTITUTION

____
USER'S INSTITUTION

FOR BILLING PURPOSES

____
USER'S NAME

____
USER'S ADDRESS

____

____

____
ZIP CODE

ACCOUNT LIMITS: $____________________

Date Starting____________________ Date Ending____________________

SPECIAL INSTRUCTIONS:

____
USER'S SIGNATURE

____
EIN USER TECHNICAL REPRESENTATIVE'S SIGNATURE

1. RETURN PARTS 1 AND 2 TO THE EIN PROJECT OFFICE, EDUCOM, 100 CHARLES RIVER PLAZA, BOSTON, MASS. 02114
2. PART 3 IS FOR THE USER'S RECORDS
3. PART 4 IS TO BE RETAINED BY THE EIN USER TECHNICAL REPRESENTATIVE

4

PART 1

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EDUCOM

EIN PROJECT

JOB RUN

Job No. 05000

Date____________________

EIN Acct.____________________

TO BE FILLED IN BY RESOURCE

Completion Date____________________

Initials____________________

COMMENTS:

RESOURCE

1. ON COMPLETION, RETURN PART 1 TO THE EIN PROJECT OFFICE, EDUCOM, 100 CHARLES RIVER PLAZA, BOSTON, MASS. 02114
2. RETAIN PART 2 FOR YOUR RECORDS
3. RETURN PART 3 TO THE USER

RESULTS TO BE RETURNED TO:

TO

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____________________ ZIP CODE

EDUCOM, 100 CHARLES RIVER PLAZA, BOSTON, MASS. 02114

USER WILL FILL IN THIS COLUMN AND THE MAIL LABEL IN COLUMN 1

TO____________________

RESOURCE INSTITUTION

EIN Program No.____________________

Calling Name____________________

Estimated Time____________________

Estimated Memory____________________

Estimated Printout____________________

Packages Data Sent____________________

GENERAL INSTRUCTIONS:

FROM____________________

USER'S NAME

____

USER'S SIGNATURE

USER

1. MAIL PARTS 1, 2, AND 3 TO EIN TECHNICAL REPRESENTATIVE AT RESOURCE INSTITUTION
2. GIVE PART 4 TO YOUR INSTITUTION'S EIN TECHNICAL REPRESENTATIVE
3. RETAIN PART 5 FOR YOUR RECORDS

PART 1

September 1968 EDUCOM *Bulletin* Volume 3, Number 4

OCTOBER COUNCIL MEETING TO REVIEW EDUCOM PROGRAMS

The Annual Meeting of the Interuniversity Communications Council will take place on Tuesday and Wednesday, 15 and 16 October 1968, on the Boston University campus. Hosts for the conference are the four Massachusetts EDUCOM members—Boston University, University of Massachusetts, Northeastern University, Tufts University—and the New England Board of Higher Education. The Tuesday afternoon and both Wednesday sessions will be open to all registrants.

EDUCOM'S NEW PROGRAMS TO BE THEME

The open sessions will be devoted to EDUCOM's three active programs—EIN, POISE, and CLC. In individual sessions, the cognizant staff members will discuss the status and plans of each program and invited panelists will present critical reviews of the concepts involved. Between sessions, the host institutions have scheduled demonstrations of educational communications media.

The **E**ducational **I**nformation **N**etwork project is funded by the Office of Education and work has been authorized to start while the final negotiations are in process. The purpose of EIN is to establish and administer a system through which computational capabilities of colleges and universities will be made accessible to users in other colleges and universities. Preliminary discussions have already been held with many EDUCOM members concerning participation, and, as a first step in the activation of the project, a small, geographically representative group has been selected to serve as the resource nodes. Under the guidance of its Executive Director, Thomas Keenan, system descriptions will be collected, newsletters and a computational-capabilities catalogue will be published, and a continuing analysis of problems and progress will be maintained.

The **P**ractice-**O**riented **I**nformation **S**ystem **E**xperiment is set up to provide a base of knowledge, techniques, and experience to be applied to the development and implementation of computer-based systems to serve those professionals who practice in cross- or inter-disciplinary areas. The initial endeavor will be to develop techniques of retrieving selected bibliographic information from files oriented to serve particular disciplines. POISE projects will include the collection and dissemination of information that describes existing and prospective information systems, consultation to developers of systems, and development of tools and methods to be used in the construction of information systems. POISE will also attack the problems associated with accessing data from a number of diverse data bases, including data-format description and identification of useful information.

The **C**ommunity **L**earning **C**enter program will utilize latest advances in technology and the social sciences to build personalized educational programs for a community's *learner members*. Designed to offer courses at the junior-college and postprofessional levels, the CLC's will offer a number of unique features. Distinguished academicians will create a body of multimedia courses relevant at the neighborhood level. Trained educational advocates will be based in each center to provide broad counseling and support services to participants, and flexible work/study programs will be devised for the user. Although community-based and -oriented, the Centers will draw on university resources as well as on the input of business, industry, and private and public organizations.

TENTATIVE PROGRAM

TUESDAY, 15 OCTOBER

AM	Registration	**PM**	EIN Session
	Business Session		Demonstrations
	Luncheon (Invited Speaker)		Reception

WEDNESDAY, 16 OCTOBER

AM	CLC Session	**PM**	POISE Session
	Luncheon		Demonstrations

POTENTIAL RESOURCES FOR EIN

The Educational Information Network (EIN) was the subject of the first of the three Technical Sessions held at the 1968 Fall Council. Thomas A. Keenan, EDUCOM's Director of Information Science, acted as Moderator. He was assisted by the following Panelists: Professor Robert J. Anderson (Texas A&M University), Professor William B. Kehl (University of California, Los Angeles), Professor Roald Buhler (Princeton University), and Dr. Morris Davis (Director, Triangle Universities Computation Center).

Thomas A. Keenan, Moderator, EDUCOM

The purpose of the Educational Information Network is to enable colleges and universities to share their computational resources with each other. To do this, a catalog describing the available resources is required, as well as a centralized record-keeping and billing system. The catalog listings would provide the information necessary to permit a person to identify and locate those computational resources that are potentially useful to him. After selecting the resource that best answers his needs, he would then prepare his data according to the required format and send them off to that resource for processing. The record-keeping system not only will assure the resource of payment for its services but also will make maintenance and purging of the catalog possible. The intention is to retain catalog descriptions of only those resources that are useful and perform as specified.

A joint grant has been received from the National Science Foundation (NSF) and the U.S. Office of Education to assist in establishing EIN. Work has begun on two tasks under the terms of this grant. The first is the identification and characterization of existing computer networks. To date, 85 reported computer networks have been identified. In many cases, however, the characteristics of these—whether or not they are operational—have been difficult to determine. In this connection, the Institutional Representatives themselves could be of great help if they would write to me about computer networks in their own or other institutions.

EDUCOM President Baruch introduces the EIN Session.

The second task under the EIN Program involves collecting the information on computational resources that is to be used in the catalog. Liaison has been formed with a number of important groups, such as the 10 institutions that received NSF grants to set up regional computer services. An invitation to all EDUCOM members to participate in EIN will soon be sent to the Institutional Representatives. EDUCOM staff members frequently find, on campus visits, that a computer center has become immersed in its task of systems programming—as, indeed, I think it must to be able to survive these days. However, in many centers, this concentration on systems programming apparently has led to a division such that the knowledge of and responsibility for application programs are often not in the computing center nor in any one place on campus. Rather, they are spread throughout the research groups and the faculty who originated the programs and who are maintaining them and whose property they are. Therefore, our invitation to participate in EIN emphasizes the need to concentrate knowledge of application computer programs in one place at each campus—if these are to be cataloged and made available for use at other institutions.

The four Panelists have been asked to comment on their understanding of the EIN Program and to describe the major computer resources that are available at their institutions.

Robert J. Anderson, Texas A&M University

Identification of computational resources has begun at Texas A&M. There are four classes of resources there that would be of interest to the EIN user: hardware not available on his own campus; data files recorded from a unique facility; general-purpose programs such as language translators, simulators, and subroutines; and special-purpose programs for specific applications.

The computer capability at Texas A&M could probably be considered as average. There is available an IBM 360/65 with a half-million bytes of memory. Although not of unusual size, the machine is being expanded and has sufficient capacity that its use could be attractive to colleges with smaller computer capacity. A relatively unusual device that is also available is a paper-tape-driven flatbed Gerber drafting machine. This has been found to be useful in the teaching of numerical control techniques.

Data files are being accumulated from cyclotron experiments and from the operation of a nuclear reactor. Rather unusual machine-readable data files exist on rainfall in Central and tropical South America, spanning the last century, and as a result of monitoring freeway traffic in Houston, Detroit, and Dallas. A variety of other machine-readable data files was reported earlier.

Under the category of general-purpose programs, we have several simulators: one to simulate the reproduction of a test genetic population, another to generate molecular structures from atomic input parameters, and, finally, an unusually large electrical-load-flow simulator. A comprehensive collection of the usual compiler and assembler programs for the 360/65 is also on hand.

Special-purpose programs include (in addition to the numerical and statistical programs) an automated registration system, an alumni record system, a system to retrieve information on current research at Texas A&M, a résumé generator, a library circulation-control program, and a library serials-control program. Some of these programs are unique whereas others are adaptations of programs that were originated elsewhere.

William B. Kehl, University of California

At UCLA, computer-controlled television sets are being used to teach programming in a chemistry course, as well as being used as regular terminal display devices. Forty such terminals are located at several points on campus to give local access to an IBM 360/75 computer.

"I think there are a couple of factors in terms of the role of computer networks that are really quite important. The first has to do with being the right size and the second has to do with the services available." With respect to being the right size, UCLA has two IBM 360/75 computers, one costing more than twice the other. The larger machine can give access to data sets in the most subtle ways. It also supports the terminal system and five Teleputers. It is of a size to support such activities as the smaller system cannot handle. On the other hand, both systems can execute the typical stream of student jobs with equal efficiency. Thus, the cost per job has a great deal to do with having access to the right-size system for that kind of job.

UCLA happens to be in a position in which it must provide a wide variety of services. Consequently, an IBM 360/91 is installed in the Health Sciences Computer Center and the larger 360/75 computer (mentioned above) is scheduled to be replaced with a 360/91 that has four million bytes of high-speed core storage. Many services are being provided on campus, such as having available SIMSCRIPT 1.5 and highly complex meteorological programs to develop daily world weather maps.

The role of EDUCOM in developing communications concerning what is available at different places is very important so that not everyone will need to invest in

William Kehl, UCLA, talks while his assistant tries to tie in with the California campus.

very complex and expensive systems. There is also need for communications concerning the use and misuse of systems and equipment, as was illustrated by the attempt of UCLA to use a data cell for storage of high-frequency access information. Experience showed this to be a misuse of that piece of equipment, and this is the kind of valuable information that should be communicated to others.

Roald Buhler, Princeton University

"I would like to first touch on a little bit of background about Princeton's experience in intracampus networks .... Back in 1962, we got an IBM 79 .... We also got a 1410 connected to it, and a different place on campus also had a 1410. The thought was that we would get a device that, I believe, was called the 1009 at each end, and that was sort of a communication adapter... between these 1410's by telephone lines .... These were about four miles apart, and there were a great many variables which had the capacity of going wrong .... The difficulties of two people working together over a four-mile distance trying to debug something were very, very large—and, actually, this project never really got off the ground ....

"About a year ago, we began putting in model 20's on the campus .... One of the reasons for doing this was that, if *you do it on campus, you work things out* properly with your telephone company [*and*] it's not very expensive at all .... The first model 20 we put in the ready room of the model 50 room so that its phone line went through a data set four miles away to a telephone company office and then it came back into the model 50 room .... Thus, we had data sets all over and we had communications all over, but we had the two machines physically next to each other so that all debugging could take place much more easily."

In May 1969, the present model 67 is scheduled to be replaced by a model 91 that has two million bytes of high-speed core storage. "This is one of the unknowns. There is an optimal amount of memory for the capability of a central processor. Is two million bytes the right size or is four million?"

There are a number of ways that the Princeton facility might be used by other places. It may be important to balance the processing load between institutions or to accommodate an overload situation. It may also be useful to have access to installations with enough memory to be able to maximize processing speed. At the same time, the relationship of cost to memory size and to processing speed is not self-evident.

Princeton is also experimenting with providing service of large-scale computers to schools that have very much smaller needs and facilities. "We have no idea of what is going to come of this... the important thing is to get in and experiment early ...." If widespread communications and transfer of jobs begins to take place, there will be a balance-of-payments problem to deal with.

The most serious criticism of program-exchange efforts such as SHARE is that they require the development of submitted programs to be frozen and the author loses control of the maintenance of the submitted program. With a network, it should be possible for an author to retain more-direct control of programs in use so that the program could be maintained in an up-to-date status.

Morris Davis, Triangle Universities Computing Center

Triangle Universities Computing Center (TUCC) serves Duke University, The University of North Carolina, and North Carolina State University. TUCC is a separate organization, governed by a Board of Directors, three from each university. Technical problems can be severe (for example, four separate telephone companies are involved at TUCC), but, in addition, "Any university, in itself, will have political problems to solve, but when you get to a regional center you enter into new dimensions—you have to talk about geopolitical problems."

In two years, TUCC has progressed from an IBM system 360/40 communicating with a single model 30 to a model 75 communicating with two model 40's, two model 30's, and two 1130's, in addition to approximately 80 nonintelligent terminals. Forty of the latter are distributed throughout the State of North Carolina under the North Carolina Computer Orientation Project (NCCOP).

NCCOP is privately financed by foundations and industry to introduce computing to higher education throughout North Carolina as far as possible. "I have seen several examples in the past—not in our own area, but elsewhere—of deans and others who felt that a particular group of people ought to learn to use computers. The way they went about doing it was simply to place a computer in the area where the people could use it. This is almost always doomed to failure unless there is sufficient motivation on the part of the people in the area. Of course, if there was that motivation, they would have been the ones in the first place to have demanded the equipment.

"The orientation project looks at this rather differently. It feels that preparation must be made in advance in placing the equipment there .... People who are called *circuit riders* prepare the ground, go to the institution, give the tutorials, and generally are present for a period of about a week preceding the actual delivery of the terminal."

A teletypewriter, communications, and computer time are provided for a one-year period free of charge to each college involved. After a year, the orientation project withdraws its service and the institution may or may not continue. A fringe benefit that is beginning to emerge is that a number of colleges have come to know each other through NCCOP and are beginning to work with each other to solve other problems.

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EDUCOM

8 November 1968

Gentlemen:

We are pleased to invite all members of EDUCOM to participate in the Educational Information Network (EIN) program. This program has been designed to provide services in terms of access to the computer resources of the other institutions. We believe that the services to be provided through EIN will be useful to both large and small institutions; still, we recognize that the value an institution is likely to receive from EIN will be related to the participation of the institution.

In the attachments to this letter of invitation we have described the benefits and responsibilities that we foresee as being associated with participation in EIN. We have also described a plan of action and a profile of the person we hope you will appoint as your liaison to EIN.

We are very interested in hearing from you concerning your interest in participating in EIN. If you do decide to participate, we request that you nominate a person to be your EIN representative by November 29. Please send a curriculum vita of your nominee to the address of this letterhead. We look forward to your response.

Sincerely,

Thomas A Keenan

Thomas A. Keenan

TK:veh

Attachments:
Section 1: Benefits of Participation in EIN
Section 2: EIN Plan of Action
Section 3: Institutional Responsibility in EIN Participation
Section 4: Profile of the EIN Representative
Section 5: The Role of the Executive Committee

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

SECTION 1: BENEFITS OF PARTICIPATION IN EIN

A variety of benefits are anticipated from EIN for both major institutions and for those with lesser resources. The following are suggested for consideration.

1. Expanded Program Availability

   One of the major goals of EIN is to become the medium by which participating institutions will make locally developed application packages available to a wider user audience. Publication of such selected material in the EIN catalog will constitute true authored publication. Academic recognition for such publication will rest heavily on the quality of the packages represented.

2. Variety of Computer Configurations

   EIN participants will have access to a variety of computer systems. These systems range from small scale computers to some of the largest computers available in the United States. They will represent the products of most of the computer manufacturers, including a wide range of peripheral equipment not generally available at one location. Through EIN, all participating members will be able to offer their own installations for use (on a fee-for-service basis) and in turn will have access to other available installations in the network.

3. Program Package Availability and Quality Assurance

   Participating members of EIN will have access to thoroughly tested and fully documented applications packages. The user of these packages will have the benefit of using the product without incurring the total development cost. The developer of the package will have his programs used for a larger number of applications, will have the benefit of critical feedback for improving his product, and the institution may set the price for use of that program according to its own policies.

4. Expanded Service Offerings

   Involvement in the EIN network will allow participating institutions to offer a wider range of services to local users. These offerings will include access to a wider range of computers than those locally available; availability of special application programs; and accessibility to specialists, at member institutions, to help solve difficult problems.

5. Computer Service Availability

For those institutions which have not as yet developed their own computer capabilities, EIN offers the chance to access computers at other installations. The institution which does not have a current need for its own computer can thus develop a sophisticated staff of computer users without incurring the costs of installing and maintaining its own facility. The network will offer him access to the size computer and configuration needed to solve a specific problem.

6. Standard Program Documentation

One of the products to be developed by EIN is a catalog of available computer programs. These programs will be described in abbreviated format to be designed by the EIN staff. It is planned that the method of presentation will become a standard for the distribution of program material between institutions.

7. Formalized Information Dissemination

EIN participants will be kept informed of on-going network activities and the activity at individual institutions through a Network Newsletter. In this manner, member institutions will have a means of maintaining a current awareness of trends in educational computation. The newsletter will also be used to disseminate information about new network capabilities, resources, and new user packages.

8. Comparative Institutional Profiles

As part of the EIN activity, profiles of participating institutions will be developed describing computational facilities and areas of special interest in automation. These profiles will be useful to institutions wishing to compare their own profiles with those of others. They can also be used as a yardstick in measuring one's own progress in the development of facilities and capabilities.

9. Mutual Problem Solving

EIN offers a means for its participants to make use of the experience gained by others in solving problems of common interest. This may be applied to such problems as converting from one computer system to another to solving computing problems in high energy physics which have been solved elsewhere in the network.

10. Reserve Computer Power

Those institutions participating in EIN will have the facility of calling on other member institutions in supplying back-up computing power in cases of local work overloads or unscheduled down periods. In many cases, some institutions are approaching their peak computer processing capability, while others who have recently converted to larger systems, have computer power in reserve. Participation in EIN allows one institution to draw on the reserve computer power of another. Further, it offers a way for currently unused computer time to be simply marketed within the educational community.

11. Billing Simplicity Through EDUCOM's Internal Accounting System

Each school supplying computer services will receive prompt payment for all such services directly from EDUCOM. EDUCOM will bill those that have been the recipients of such services. The supplying institution is thus relieved of the need for credit management, multiple billing, etc.

SECTION 2: EIN PLAN OF ACTION

The following plan of action has been designed for participating institutions. Each EDUCOM member is invited to play an active role in the EIN program. Its purpose is to develop capability for the mutual use of computer resources.

1. Nomination of EIN Representative

   The institution will nominate a representative to be responsible for EIN activity. The functions to be performed are defined in section 4, Profile of the EIN Representative.

2. Formation of the EIN Council

   The EIN Council will be composed of the representatives from participating institutions and will provide guidance to the EIN program.

3. Selection of Executive Committee

   An executive committee will be selected from the EIN Council. Three meetings per year will be supported by EIN funds. This executive committee will represent the council in guiding the development of EIN as specified in section 5, Role of Executive Committee. A meeting of an ad hoc executive committee will be called as soon as possible to attend to organizational matters.

4. Initial Activities of EIN Representatives

   Immediately upon nomination, the representative will initiate activities described in section 6 such as program collection and documentation, informing colleagues in his institution of EIN purposes, preparing a descriptive summary of the institution's characteristics and resources that are pertinent to EIN.

5. EDUCOM Staff Activities

   The EDUCOM staff will prepare a detailed plan of action and directory material for consideration by the executive committee. Acting on the recommendations of the executive committee, a directory of functional program descriptions will be published, maintained, and expanded. Continuing publication activities will depend upon support of the council and its executive committee.

SECTION 3: INSTITUTIONAL RESPONSIBILITY IN EIN PARTICIPATION

Each institution that decides to participate enters into certain responsibilities. Those we can foresee are:

1. The nomination and support of a person to represent the institution to the other participating institutions (the EIN representative).

2. Support of the activity of gathering documenation of computer programs from faculty and projects where they have been developed.

3. Verification that computer programs to be submitted for cataloging have been thoroughly tested, and providing such computer time as necessary for the EDUCOM staff to conduct any further verification tests or pricing runs.

4. Submission of functional descriptions of computer programs for cataloging.

5. Agreement to receive and process requests for service from other EIN participants.

6. The keeping of records of services provided and submission of these records to EIN in such detail and form that EIN can invoice users and can document remote usage for purposes of reporting, planning additional services and purging of the catalog.

7. Support of other activities of the EIN representative and his associates, such as: assistance to local faculty and staff in use of distant resources, representation of distant users in accessing local resources.

SECTION 4: PROFILE OF THE EIN REPRESENTATIVE

In introduction, it must be noted that the tasks of the EIN representative are so varied in nature that we do not conceive of one person handling them all. Many of the requirements for an interface between the Institution and EIN require a staff member of sufficient stature to deal with the institutional organization at a reasonable level, who is capable of representing the institution to EIN, and who has sufficient responsibility to represent the resources being discussed. At the other end of the requirement scale, we need a person who is well aware of the problems of using a computer. He must be capable of evaluating programs and their descriptions, making suggestions for their improvements, ascertaining the source of trouble which occurs in the running of a program. This constant day to day work is of a level quite distinct from that mentioned above.

The functional roles of the EIN representative can be broadly defined as:

1. Representation - includes the official capacity and responsibility for representing the institution in EIN technical matters and representing EIN to the institution. Implies the existence of a well-defined relationship among the EIN representative, the institution, and EIN.

2. Planning/Advisory - includes the responsibility for integrating EIN plans with institutional requirements and performing advisory functions for the participating departments and EIN committee or council. Implies the existence of a committee or a planning group.

3. Implementation/Supervisory - includes responsibility for assignment of tasks related to computer activities and documentation, also supervision of their completion within specified time parameters. Implies the use of graduate students or other personnel.

4. Coordination - includes the responsibility for ensuring that the several departments participating in EIN work together. This role implies that academic departments, administrations, and the computer center each have functions to perform in the EIN program.

5. Evaluation/Communication - includes the responsibility for monitoring and reporting program progress at the institution, also includes 2-way communication between the participating departments and the EIN staff at the institutions, and between the institution and EDUCOM's EIN staff. May imply a monthly status report and/or evaluation and problem solving meetings.

SECTION 5: THE ROLE OF THE EXECUTIVE COMMITTEE

The executive committee of the EIN Council is seen as having four major functions. These are:

1. Representation: The executive committee is to be the channel through which the needs and wishes of the EIN Council are to be represented to the administrators and staff. The council, itself, may wish to meet from time-to-time either nationally or regionally. The executive committee will meet regularly to represent the council.

2. Leadership: The executive committee will consist of individuals recognized for their leadership ability. The committee will be expected to provide leadership to both the EIN Council and to the staff in helping to define the developing role of the Educational Information Network.

3. Advisory: In addition to giving leadership in planning, the executive committee is expected to be an invaluable source of advice to the administration of EIN.

4. Review: The executive committee be responsible for establishment and maintenance of the quality standards of EIN activities. For example, it will critically review publications of EIN and material submitted for publication.

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EDUCOM

11 December 1968

To: All Institutional Representatives
All EIN Technical Representatives

Gentlemen:

On Saturday, 11 January 1969, the day after the EIN Technical Representatives' meeting, we will be holding a meeting for all those particularly interested in automated management systems for administration and planning in the university. Our goal is to develop the facilities for serving such users under the EIN program.

A growing number of colleges and universities are experimenting with various kinds of computer-based aids to planning and administration, and the Board of Trustees of EDUCOM has recommended that reports on such systems be a part of the agenda at the Spring 1969 Council Meeting.

EDUCOM has decided to hold a meeting of representatives from active and interested schools to seek your help in analyzing (and perhaps defining) the role it can play in facilitating interinstitutional cooperation in the development, sharing, and operation of computer-based aids to academic administration. You are invited to bring any documentation or other descriptions of such systems developed or in use at your institution.

Please let me know if you plan to attend. We will be happy to make hotel reservations for you if you wish. I can be reached at (617) 227-1805.

Our very tentative agenda for the meeting will be:

1. Discussion of the overall problem.
2. Possible relationship of EIN to this project.
3. Participants' description of systems they use or have developed.
4. Possible EDUCOM roles.
5. Establishment of a pool of consultants to advise EDUCOM institutions on implementation and transfer of computerized aids to academic administration.
6. Probable pay-offs of proposed program.
7. Possible funding sources.

Sincerely yours,

Jordan J. Baruch

Jordan J. Baruch
President

JJB:jmd

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100 CHARLES RIVER PLAZA • BOSTON • MASSACHUSETTS 02114 • (617) 227-1605

EDUCOM

16 December 1968

Memorandum

To: All Institutional Representatives and
EIN Technical Representatives

From: Thomas A. Keenan

Gentlemen:

A recent memorandum from Dr. Jordan Baruch announced a meeting would be held 11 January 1969 for discussion of automated management systems for administration and planning in universities. That memorandum inferred that there will be a meeting of EIN technical representatives on 10 January, and in so doing demonstrated that our left and right hands are not always co-ordinated.

The purpose of this memorandum is to announce a meeting of EIN technical representatives at the Boston offices of EDUCOM on 10 January 1969. We recognize that this is very short notice for many of you. Nevertheless, we hope that all the EIN technical representatives will make a serious effort to attend this first meeting. We will be happy to make hotel reservations for those needing them. Please call the Boston office of EDUCOM to indicate what reservations will be needed.

The basic purpose of this meeting will be to reach a more complete understanding of what constitutes the activities of the EIN technical representatives, of the format to be used for programmed documentation, of the procedures to be used for authorizing use, and of the procedures to be used for accounting and billing. An agenda together with background information will be sent to the EIN technical representatives in the near future.

I hope that you will forgive the very short interval between this announcement and the date of the meeting and the fact that this meeting and the meeting on automated management systems have been announced in the reverse order of what was intended.

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

100 CHARLES RIVER PLAZA • BOSTON • MASSACHUSETTS 02114 • (617) 227-1805

EDUCOM

26 December 1968

MEMORANDUM

To: All EIN Technical Representatives

From: Thomas A. Keenan

Subject: January 10th Meeting Agenda

Gentlemen:

The information in this packet will be the subjects of discussion at the January 10th meeting. Enclosed are position papers related to several tasks that must be dealt with in order to begin implementation of the network activities. Specifically, we must reach some agreements about documentation format (s) for the EIN soft ware catalog, procedures for requesting service, an organizational structure and methods of billing and accounting. Please familiarize yourselves with all relevant procedures at your institution so that you can assess any plans proposed in terms of potential problems or conflicts.

The January 10th meeting is scheduled from 9:00 A.M. - 4:00 P.M. at the Holiday Inn - Charles River, Boston (across the Mall from EDUCOM headquarters at 100 Charles River Plaza. Hotel reservations on site are being scheduled by Mrs. Verna Hart at EDUCOM. You may call her at (617) 227-1805.

As you know, Jordan Baruch has scheduled an additional meeting on 11 January for those interested in automated management systems for administration and planning in the university. Those who plan to attend should ask Mrs. Hart to make reservations for both meetings at the same time.

RDF:veh

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

POSITION PAPER ON REQUESTS FOR SERVICE

The basic purpose of the Educational Information Network is to make access convenient for authorized people in participating institutions to computer programs and facilities at other participating institutions. To this end, a directory of facilities and programs will be published and maintained. Maintenance will mean frequent additions, corrections, and deletions so that each copy will need to be registered.

The need to register directory copies implies a controlled distribution--initially limited to the EIN technical representatives. Thus the EIN representative will find it necessary to advertise the existence and availability of the directory to others in his institution. As a result of advertising, you can expect that some people will want to browse through the directory and others will call to ask whether specific programs and services are available.

Centralization of responsibility for the directory on a campus gives assurance that it will be kept current. It also provides an opportunity for some control over who uses outside facilities. On the one hand, an institution may not want a member of its faculty to use facilities at another institution if it feels that equal (or superior) service can be obtained internally. On the other hand, the institution providing service (and EIN) will want to know that the individual requesting service has been authorized to make a request. Presumably a person qualified to use a local facility will be authorized to use another facility under EIN.

Since the purpose of EIN is to make access convenient, this access should not be delayed for procedural reasons. Still, the EIN office will need to be informed of who has been authorized to use other facilities and for what purpose. Therefore, we propose a simple form to be completed in three parts to provide each institution and EIN with basic information about who is using what and where. A proposed form is shown.

EDUCATIONAL INFORMATION NETWORK
APPLICATION FOR ACCESS

APPLICANT ______________________ DATE ____________

BILLING ADDRESS ______________________ Code ____________

______________________ Phone ____________

STATUS OF APPLICANT

______ faculty

______ staff

______ graduate student

______ other ____________

TYPE OF USE

______ Research

______ Classroom

______ Master's thesis

______ Doctoral thesis

______ Administrative

______ Other ____________

FACILITY REQUESTED ____________

I expect to use the following programs (language, files, etc.) ____________

____

Abstract of project: ______________________________

____

Funds are available to support this application not to exceed $________. I agree to pay when billed at established rates for services used as a result of this application.

SIGNED ______________________

The picture we have of a process for satisfying a request for service is:

1. A user calls or comes to his EIN technical representative to say he wants to use a program described in the directory.
2. The user completes and signs the "application for access" form.
3.
    a. If the access is not to be on-line, the user may need assistance with job cards and in correct data formatting. The EIN representative may wish to communicate by phone with the EIN representative at the resource facility.
    b. Tape or cards are mailed (transmitted) to the resource along with a copy of the "application for access" form. Another copy of the form is mailed to the EIN office.
    c. Tape or cards received are inspected to see that they generally conform to the rules of local practice.
    d. The job is entered into the job stream and results returned to the EIN representative (or a person he designates).
    e. The output is inspected. If the job has failed, an immediate phone check with the originating EIN representative may save considerable time.
    f. The output of a successful job is returned to the originating EIN representative who passes it on to the user.
4.
    a. If the access is to be on-line, the user may need assistance in finding a terminal of a type supported by the resource facility and in the sign-on procedure.

b. Copies of the "application for access" form are mailed to the EIN representative at the resource and the EIN office.

c. In case of failure, communications should be channeled through the EIN representatives so as to provide the most professional service.

POSITION PAPER ON BILLING AND ACCOUNTING

1. It is intended that all costs incurred through use of a resource be charged to the user of that resource.
2. Resources may charge according to any regular schedule of rates, including (if they wish) premium rates designed to compensate for any additional costs involved in providing distant services.
3. Resources may levy additional charges (if they wish) for the use of particular programs or data files. Such additional charges can be thought of as royalties to the author of a program or as a way of distributing the cost of developing and maintaining particular programs and data files.
4. All charges for the use of a resource will be described in the EIN directory.
5. Each resource should establish a single account (when subaccounts are available) or a single block of accounts for use by EIN.
6. An invoice to the EIN office will be paid directly to the resource submitting the invoice.
7. Each invoice must be supported by details indicating who is responsible for each job, the cost of each job and the program or file used. It will be helpful to have the form of this supporting information standardized. For purposes of discussion a possible standard form (on an 80 column card) is:

columns	content
1-3	three character resource institution code
4-6	three character user institution code
7-11	five character program/file identification

columns	content
12	mode of use (0=batch, 1=on-line)
13-18	date of use
19-28	subaccount number (user identification)
29	method of time measurement (0=seconds, 1=hundredths of minutes, 2=tenths of minutes, etc.)
30-34	time used
35-40	cost of time used
41-45	additional charge
46-80	name of user and comments

8. The EIN office will use the detail cards received to develop statistics concerning amount and type of use between institutions and to identify the amount of use of programs and files. These cards will also be used to produce an invoice for the individual user (who may have used several resources).

9. Under the supporting grant from the U.S. Office of Education, EDUCOM needs to produce reports on the sharing of costs of EIN. To be able to make these reports, periodic information will be needed from the EIN technical representatives concerning the cost of local contribution to EIN. These costs would include the cost of representatives time, travel, and uncompensated computer time (as, for example, special testing of programs). We suggest that, prior to the end of each quarter, each EIN technical representative send a statement of the total local contribution to the EIN office.

POSITION PAPER ON EIN PROGRAM DOCUMENTATION

The first task of the EIN program is that of creating a set of user program abstracts for each institution's software library. User programs are defined as freestanding or independent programs which perform substantive computation or processing. A user program requires no programming knowledge on the part of the user. Pre-processing activities are limited to the preparation of a data deck. Within this definition, it is intended that each program abstract will perform four functions:

1. To describe the program in functional terms so that a user can decide whether it will or will not perform the processing task of interest to him.
2. To summarize as briefly as possible those items of information required to use the program.
3. To define explicitly the processing options and parameters on which data preparation depends.
4. To indicate reference sources for any complex items of information related to algorithm, mathematical method, or theoretical basis.

The Documentation Task

Each EIN representative is responsible for obtaining copies of the program and its existing documentation from either the computer center or the department of origin. From these two sources, the EIN representative and assistants will collect the following information as background for preparation of a program abstract:

1. What is the program's name, acronym, and loading name (if different).
2. Who originated the program and where is this person located (how can he be contacted)?
3. What is the purpose of the program? To compute what or process what?
4. What algorithms, mathematical method, or statistical technique is the program based upon?
    (a) Give name of method, list the formula, arguments and a brief statement that identifies the theoretical basis for the technique involved.
5. What kind of information is used for input?

6. How is input data structured? (Tabular form)
    (a) Data type - Alphanumeric, Numeric, or Text.
    (b) Data Source - Survey, Measurement, Experiment.
    (c) Data processing options - list and define.
7. How is the output structured in terms of answers provided (in tabular form)?
    (a) Output Form - form of answer to input question.
    (b) Type of output - numbers, graphs, text.
    (c) Meaning or formulation of each answer.
    (d) Diagnostic messages of user program upon failure.
8. Is the theoretical method or programming method documented elsewhere? If yes, provide:
    (a) List of references by author, title, source.
    (b) Brief statement of explanation or comment.
9. Please provide a test case including:
    (a) Example of the source of the data.
    (b) Example of the input form or matrix.
    (c) Example of the output form, identifying each item.
    (d) Cost for the sample problem or test case.
10. Commentary or supplementary information.

Preparation of Abstracts

We propose that the information outlined above be sent to the EIN (EDUCOM) office where the staff of EIN will prepare program abstracts to the best of its ability. We cannot promise to prepare an abstract for every set of data submitted. As abstracts are prepared and published it is anticipated that the makeup of a useful abstract will become more apparent. As this takes place it is expected that responsibility for the actual preparation of abstracts will shift to the local EIN representatives so that greater numbers of abstracts can be processed.

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MEMORANDUM

TO: All EIN Technical Representatives

FROM: Thomas A. Keenan and Richard D. Ferguson

SUBJECT: Data Collection for Software Catalog Project

DATE: 30 January 1969

In attempting to plan for the development of the software catalog, several problems were noted by the EIN steering committee (temporary). To plan for the resources required, we need to collect data regarding:

(1) The number of main programs that are available for inclusion in the initial documentation effort.

(2) The types or kinds of programs available at participating institutions; e.g., statistics programs, mathematics programs, menu-planning programs, bio-medical programs, etc.

(3) What percentage of the available programs are already documented completely or what percentage require documentation.

(4) Some estimate of the total number of pages of documentation existing at each participating institution and some estimate of your expenditures in this area, if possible.

In order to obtain this information, we are asking each EIN Technical Representative to help us by performing the following activities as soon as possible. Please do these by February 15:

(A) Secure a listing of available Main Programs at your institution. (A computer printout of the library and any programs known to exist in departments around the campus will be acceptable.) Please make sure that it provides program, name, and a one sentence description.

(B) In the margin of the listing, place a check beside those main programs which you consider eligible for inclusion in the first pass of documentation. Also note whether these programs are fully or partially documented.

(C) Provide a numerical estimate of the total number of pages of documentation existing at your institution.

(D) Estimate, if possible, how many dollars per year your center spends on the documentation of programs.

We realize that some of this information will be difficult to estimate, hence cost breakdowns, although desired, are optional.

This data will be analyzed and reported to the Steering Committee in summary form at the February 27 meeting. At this meeting several important decisions (especially those regarding the resources, funding, and time parameters required for implementation) will be discussed and formalized for approval by participating members. Your inputs are therefore vital to the decision-making process.

Please send all material to Richard D. Ferguson at 100 Charles River Plaza, Boston, Massachusetts 02114, before February 15.

RF:bas

MEMORANDUM

TO: All EIN Technical Representatives

FROM: Thomas A. Keenan

DATE: 30 January 1969

Attached are:

(1) EIN Network Directory (version 0)

(2) Memo on Data Collection

(3) Address lists of Technical Representatives, Boston meeting attendees, and Steering Committee.

The EIN Steering Committee will meet on 27 February. It will need the data requested in item (2). Especially to gauge the size of the documentation task, we urgently need a list, by title, of programs you can make available via EIN.

The current version of the EIN Network Directory is attached so that you can provide corrections and amplification. Please send corrections and additions to Mr. Richard Ferguson, 100 Charles River Plaza, Boston, Massachusetts 02114.

The first EIN newsletter will be out shortly. Please send any contributions to T. A. Keenan, 9650 Rockville Pike, Bethesda, Maryland 20014.

The Steering Committee has already recommended that a second meeting of EIN Technical Representatives be held. It appears that April 14, the day preceding the EDUCOM Council meeting at Boulder, Colorado, will give the Steering Committee time to prepare its report.

TAK:bas

EIN TECHREPS MEET

On 10 January, an organizational meeting of EIN was held at the Holiday Inn, adjacent to EDUCOM's Boston headquarters. Some 60 of the newly appointed Technical Representatives and other interested parties attended the all-day session. The basic and common problems of billing and accounting for services and of documenting the individual capabilities were discussed at length. To correlate the comments and make recommendations for standard procedures, an EIN Steering Committee was formed under the chairmanship of EIN Executive Director, Thomas A. Keenan. The 10 members were grouped into three subcommittees—

Billing and Accounting
- Daniel Bernitt, The Pennsylvania State University
- David J. Blackwell, Educational Testing Service
- Thomas A. Hulbert, Northeastern University

Documentation and User Matching
- Howard E. Bedell, The University of Georgia
- Lorraine Dormann, Northwestern University
- Merlin W. Wahlstrom, The Ontario Institute for Studies in Education

Organization
- Demos Eitzer, The City University of New York
- E. P. Miles, Jr., The Florida State University
- James G. Miller, Cleveland State University
- Edward F. Staiano, Bucknell University

FINAL REPORT
Bureau of Research No.: 8-0697
Grant No.: OEG-0-8-080697-4468 (007)

DIRECTORY OF INFORMATION NETWORKS AND NETWORK ACTIVITIES

Thomas A. Keenan
Richard D. Ferguson Jr.

Educational Information Network (EIN)
Interuniversity Communications Council (EDUCOM)
P. O. Box 364
Princeton, New Jersey 08540

March 1969

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

AVAILABLE FROM: EDUCOM, P. O. Box 364, Princeton, N.J.
USOE, Bureau of Research, Washington, D.C.

EIN PROGRAM MIX

Prepared by the Interuniversity Communications Council (EDUCOM)
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National Science Foundation
[Grant Number: OEG-0-8-080697-4468 (007)]

Educational Information Network Program (EIN)
Thomas A. Keenan—Executive Director
Richard D. Ferguson Jr.—Research Associate/Editor

March 1969

INTRODUCTION

The following programs have been suggested for inclusion in the first software documentation effort. Each program listed by a submitting institution is available and documented to some extent. This compilation represents only those institutions who have provided responses to our data collection project. Those who did not respond, or had no specific programs to submit at this time, have not been included.

The EIN staff still needs this information from each participating institution. Those who have not yet responded to the January 30th memorandum, are encouraged to compile their information and bring it to the Boulder Conference for inclusion in the next report.

PROGRAM TYPE CODES

ST = STATISTICS/TESTING & MEASUREMENT

MA = MATHEMATICS

ET = ENGINEERING / TECHNOLOGY

LI = LIBRARY/INFORMATION SCIENCE (INDEX, ISR, SDI)

CU = COMPUTER UTILITY (DUMPS, LOADERS, ASSEMBLERS, COMPILERS) LIST, SORTS, EDITORS

AD = ADMINISTRATIVE (PLANNING, SCHEDULING, PERSONNEL, ETC.).

ES = EARTH SCIENCES (GEOLOGY, MINERALOGY, GEOGRAPHY)

LS = LIFE SCIENCES (BIOLOGY, MEDICINE, ZOOLOGY, ETC.).

PS = PHYSICAL SCIENCES (PHYSICS, CHEMISTRY, ASTRONOMY).

BS = BEHAVIORAL SCIENCE (PSYCHOLOGY, SOCIOLOGY, EDUCATION, ETC.).

HU = HUMANITIES (ART, MUSIC, HISTORY, ETC.).

OR = OPERATIONS RESEARCH (FORECASTING, SIMULATION, LINEAR PROGRAMMING, STOCHASTICS

EIN PROGRAM MIX

INSTITUTION	ES	ST	ET	OR	PS	MA	CU	LS	LI	BS	AD	TOTAL PROGRAMS
1. Wash. State		3										3
2. Texas A&M		2	4	1	1	1						9
3. U. of Pitt.		12		4		2	2	1	1			22
4. Northwestern		22		3		3	3		1	5	1	38
5. U. of Akron		6				2	2		2		1	13
6. U. of Calgary	1	18	23	3	6	18	2			2	1	74
7. Iowa State		15	2			10	5	1	1		2	36
8. U. Cal. (L.A.)								54				54
9. Fla. State	1			3			3	1	3			11
10. Ed. Test. Ser.		6				1						7
	2	84	29	14	7	37	17	57	8	7	5	267

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
The University of Akron		Nonlinear Regression Analyses	ST
"		Linear Regression Analyses	ST
"		Mark Sense Test Scoring	ST
"		Test Summary and Grade Computation	ST
"		Computer Equipment Planning System	AD
"		RAX/44 Machine Language Loader	CU
"		DEBAP - Provides a psuedo assembler listing from 360 relocatable decks.	CU
"		KWIC Index	LI
"		Polynomial Curve Fit	MA
"		Inner Correlation Coefficients	ST
"		Chi - Square	ST
"		Simultaneous Equation Solver	MA
"		Information Retrival Demo	LI

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
The University of Calgary	Programme to generate Bassel Functions; with printed and punched output		MA
"	Programmes to generate trigonometric functions, their combinations with each other and numerical constants		MA
"	Numerical integration using Fortran IV subroutine for quadrature. Programme for solution of		MA
"	Eigenvalue problems, i.e. calculation of the determinant of the coefficient matrix		MA
"	Shell dynamics - frequencies, modes, forced response.		ET
"	Thermodynamic properties of ideal gas in a shock tube.		ET
"	Calculation of detonation properties for condensed explosives and properties in later adiabatic expansion. Uses any chosen member of 3 equations of state to describe detonation products		ET

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
The University of Calgary (Continued)	A nine term power series		MA
"	Finite element program - dynamics of plates and shells frequencies only.		ET
"	Stresses in beam due to impact.		ET
"	A Programme for Determining Natural Frequencies and Associated Mode Shapes of Ring-Stiffened and Mass-Loaded Cylindrical Shells - Modification in Fortran language of the MAD programme developed by Michalapoulos and Muster of the University of Houston, Texas		ET
"	A programme for determining the Natural Frequencies and Modal Eigen Functions of Rectangular Orthotropic Plates Simply-supported on Two Opposite Sides and Free on the Other Two Sides.		ET
"	Optimsations of Stirling cycle Regenerative Machines		ET
"	Coefficient of Double Fourier Series—Double Integration by Triangular Method		MA

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
The University of Calgary (Continued)	Shell Stability		ET
"	Para Plates		ET
"	Channel Flow		ET
"	Data Manipulation		MA
"	Gamma Approximation		PS
"	Likelihood		MA
"	Stress Analysis		ET
"	Vibrations		ET
"	Anisotropic Shells		ET
"	Thermoelasticity		ET
"	Combinatorics		MA
"	Automatic Speech Recognition		ET/BS
"	Fundamental Number Theory		MA
"	Error Analysis		MA
"	Fluid Mechanics		ET
"	Compiler Construction		OR/CU

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
The University of Calgary (Continued)	Scheduling		AD/OR
"	Base Polynomial		MA
"	Quadrature		MA
"	A system of Computer Programmes for use in Psychology and Education.' Means,standard devaition, correlation matrix up to 70, principal components analysis, Varimax rotation, promax rotation, Second order factor, factors scores regression method. Factor scores components method, multiple regression, iterative technique and inversion technique. Combination of correlation matrices using scores, partial correlations, first order or multiple order.		ST
"	Multiple linear regression programs analysis of variants programme - one way, two way, three way and six way.		ST
"	Simple analysis of co-variants		ST
"	Analysis of variants Lindquist type 1, type 3, and type 6.		ST

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
The University of Calgary (Continued)	Finn's programme "Multi-Variant" for variants, and multi-variant analysis of variants and co-variants		ST
"	Analysis of Natural Language		BS
"	Some Computer Assisted Learning Programmes.		BS
"	Implementation of SNOBOL		OR/CU
"	Descriptive Statistics and Item Analysis Programme		ST
"	10 variable multiple correlation - regression analysis each yields the regression equation, means, standard deviations, sums of squares for each variable, Beta coefficients, F. values for the regression coefficient, computed values, and residuals from regression and similar answers. Various transformations of the input data are possible.		ST
"	Determination of exponent for distance in the gravity-potential model.		ES

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
The University of Calgary (Continued)	Determination of Durbin-Watson statistic for auto-correlation.		ST
"	Multiple covariants - Analysis of Linear multiple covariants. Adapted from a Department of Geography, University of Iowa programme - gives multiple covariants analysis		ST
"	Optimization of parameters for any non-linear function		MA
"	Inverse Laplace Transform		MA
"	Frequency Response.		ET
"	Root Locus		MA
"	Total Square Integral		MA
"	State Variable Calculations		ET
"	Wiener Optimum Systems		ET
"	MAC/RAN (Random Data Analysis).		MA
"	A substation modelling programme for the logic control of station switching.		ET
"	Alpha Factor Analysis		ST·

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
The University of Calgary (Continued)	Basic Statistics - Chi square analysis		ST
"	Cross Tabulations		ST
"	Descriptive Statistics		ST
"	Principal component analysis with Promax rotation image analysis		ST
"	Non-parametric static package		ST
"	T tests between independent samples		ST
"	T tests between dependent samples		ST
"	Multi-variants - Univariant and multi-variant analysis of variants for any crossed and/or nested design with or without con-commitant variables.		ST
"	Determination of rocket aspect from magnetometer and solar sensor records.		ET
"	Monte Carle simulation of porportional counter response to X-rays, to estimate observed/primary spectra transformation.		OR

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
The University of Calgary (Continued)	Plotting of rocket orientation to investigate source contributions.		ET
"	Transformation of horizon to galactic coordinates		PS
"	Determination of arrival direction and size of extensive air showers		PS
"	General filing and sorting programmes.		CU
"	Paper tape editing programmes		CU
"	Termination of noise suppression due to space charge limitation in an ultra-sonic image conductor.		PS
"	Development of three analysis for study of recurrence tendencies. (complete).		PS
"	Study of power spectra (in progress).		PS

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Univ. of Calif., L.A.	Bio-Medical Statistical Programs Package	All of the programs except six (which are presently being converted) are written in FORTRAN IV and use dynamic storage allocation. This latter feature, besides making it possible to handle a large variety of problems, makes it possible to run the programs on machines with varying amounts of available core by adjusting a single parameter.	LS

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Educational Test. Ser.		Multivariate Analysis of Variance	ST
"		Minres Method of Factor Analysis	ST
"		Nonmetric Multidimensional Scaling	ST
"	AMOLT	Algebraic Manipulator of Linear Transforms	MA
"		Direct Oblimin	ST
"	RMLFA	Restricted Maximum Likelihood Factor Analysis	ST
"		Matching Factor Solutions	ST

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Florida State Univ. (Continued)	CONTEXT	Concordance preprocessor. Breaks text into contextual units	LI
"	CONCORD	Abstracts key words from preprocessed contextual units	LI
"	DOVACK	Remedial reading computer assisted instruction for remote terminal	CU
"	DTMW	Documentation and technical manual writer -- Compositor, Editor	CU
"	PERT/TIME	Management program and review technique	OR
"	SAMOS	Simulator for SAMOS computer outlined by school math study group	OR
"	SORT/MERGE	File manipulation -- SORT/MERGE of specified data field	CU
"	SYMAP	Analysis of aerial data with synagraphic maps	ES
"	TRAN/PLAN	Series of T/P programs which assist in the analysis of a road network	OR/ET
"	6000 KWIC	Key Word in Context Program	LI

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Iowa State University	AARDVARK	An analysis of variance and co-variance program for a wide class of statistical problems - both orthogonal and non-orthogonal.	ST
"	APTERYX	A Factor Analysis progrm for Lawley-maximum likelihood, Thompson-least squares, and Hotelling-principal components.	ST
"	AUKLET	A non-linear mathematical programming routine to solve problems of the form: minimize F(x) subject to the constraints rj(x) _ 0 for j = 1, 2, 3, ..., n. Program write up proposes"(1) to inform the user about the correct formulation for optomizing a convex function subjected to concave constraints, and (2) to provide a detailed description on how to use the program."	MA
"	ELAFOS	A frequency counting and Chi Square analysis program. Contingency tables are computed under parameter card control for each table.	ST
"	The OMNITAB Programming System	A programming system oriented toward easy implementation of statistical and numerical analysis problems of modest size.	ST

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Iowa State University (Continued)	TARSIER	A main program which implements Hartley's modified Gauss Newton method for fitting of non-linear regression function by least squares. A subroutine must be written for each application.	ST
"	ZORILLA	A program to optomize a quadratic function subject to linear restrictions.	MA
"	Multiple Linear Regression	A program to compute regression coeficients, residual mean-square, etc. from raw data or a matrix of sums of squares and cross products. Probability plots. predicted values, designation of independent and dependent variable subsets, transformation on the raw data, etc. are computed under parameter card control.	ST
"	Weighted Polynomial Regression Using Orthogonal Polynomials		ST
"	GAVIAL	A general purpose routine for analysis of variance and covariance for balanced and partial balanced incomplete block and lattice designs.	ST

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Iowa State University (Continued)	FURNIVAL Regression Screen	A program to calculate a multiple correlation coeficient for each of the 2^k -1 combinations of the independent variates. The capability exists whereby a subset of independent variates can be fixed in the model, then R^2 is computed including the subset and the combinations on the remaining independent variates.	ST
"	General Regression Model Building	A program that contains four algorithms: i) the stepwise regression, algorithm, ii) a forward sequential selection algorithm, iii) a sequential deletion algorithm, and iv) computation of the "best" subset of size k for k = 1, 2, 3, ... number of independent variates (this subroutine uses and algorithm due to Hocking).	ST
"	General Frequency Program for	1, 2, and 3 digit integer variables. A program to compute the frequency distribution, mean, and standard deviation for all 1-digit variables. Input format and total number of variables specified by parameter card.	ST

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Iowa State University (Continued)	Factor Analysis Programs	A number of programs are available for matrix reduction, transformation, and the computation of factor scores for variations in the factor analysis procedure.	ST
"	Random Normal Deviate Transformation	A table look-up program to transform integer values 1, 2, ..., 98, 99 to Random Normal Deviates.	ST
"	Random Data Selection Program	A program to select (without replacement) n_1, n_2, ... n observation from population groups N_1, N_2, ..., N_p where n_i _ N_i and n_i is specified by parameter card control.	ST
"	Product Moment Correlations	Several programs are available to compute correlation matrices of order _ 900.	ST
"	SDI	Selective dissemination of information based on some 1500 journals. Notices distributed weekly with user feedback.	LI
"	Eigenvalue Calculation	Calculates all eigenvalues of general matrices with equal precision.	MA

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Iowa State University (Continued)	SDS 910	Assembler program in which the assembly for the 910 is done on an IBM 360/65	CU
"	Power System Computer Programs	Which computes load flow, analyzes faulted networks and stability of a network.	ET
"	CADET	Computer Augmented Design Engineering Technique	ET
"	VET MED	A group of programs for processing both administrtive and medical information for veterinary diagnostic laboratories. A variety of programs for processing analog signals by converting to digital form for processing biological data on a LINK - 8.	LS
"	Student Financial Aid	This consists of four programs which are used to administrate the student financial aid programs.	AD
"	Class Scheduling	This program assigns students to specific schedules of classes on our computer	AD
"	ABSRT	Fortran Subroutine to Bucharest sort a list into ascending order.	CU

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Iowa State University (Continued)	DBSRT	Fortran subroutine to bucharest sort a list into descending order	CU
"	SESRT	Fortran subroutine to shuttle - exchange sort a list into ascending or descending order	CU
"	USIMQ	Fortran subroutine to solve a set of simultaneous linear equations	MA
"	UMINV	Fortran subroutine to invert a matrix	MA
"	UGELG	Fortran subroutine to solve a simultaneous linear equations with multiple right - hand sides	MA
"	NODE	A package of fortran subroutines to solve ordinary differential equations with initial conditions	MA
"	DNODE	A package of fortran subroutines using double precision arithmetic to solve ordinary differential equations with initial conditions	MA
"	DUMNV	Fortran subroutine to invert a matrix using double precision arithmetic	MA

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Iowa State University (Continued)	CGELG	Fortran subroutine to solve simultaneous linear equations with complex coefficients and multiple right-hand sides	MA
"	BSORT	An assembler language subroutine to bucharest sort a list	CU

EIN PROGRAM MIX

INSTITUTUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Northwestern U.	LNPRGR	Linear Programming of Small Problems	OR
"	PERTC	Critical Path Summary - Probability Statistic Based on Normal Curve	OR
"	SPURT	Simulation Package for University Research and Teaching	OR
"	IDSEQN	Program Deck Identification Field Sequencing Program	CU
"	SEQCHK	Sequence Checking	CU
"	TIDY	Renumber and Edit FORTRAN Programs	CU
"	ATTANAL	Program for Evaluating	
"	TIMEX	Interrupted Time Series-- 3 Tests of Significance	BS
"	TRIAL	Trial Information System	BS
"	INFOL	Information Oriented Language	BS
"	INDEXER	Book-type Index Program	LI
"	INDIFF	Computer Program for the Analysis of Transaction Flows	AD
"	UPDALI	Library Update	CU.

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Northwestern U.	PROFILE	Computer Means, Medians Frequencies	ST
"	B34T	Generalized Stepwise Regression	ST
"	BISR	Biserial - Point Biserial Correlation Program	ST
"	NUCORRI	N U Correlation Analysis - Version 1	ST
"	NUCCORR2	N U Correlation Analysis - Version 2	ST
"	PLOTYY	Multiple Regression and Correlation Modified with Plots	ST
"	EIDISC	Stepwise Multiple Discriminant Analysis	ST
"	MESA1	95 x 95 Factor Analysis with Varimax Rotation	ST
"	MESA2	Principal Components Analysis	ST
"	MESA3	Data Correlation and Factor Analysis Program	ST

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Northwestern U.	MULCVR	Multivariate Analysis of Variance-Covariates-Hotellings T	ST
"	CHISQR	Chi Square and C Statistics	ST
"	MANNWH	Mann-Whitney U-Test	ST
"	PPRANK	Punch and Print Rankings	ST
"	RKSTAT	Rank Order Statistics	ST
"	AID	Automatic Interaction Detector	ST
"	GUTTSCL	Guttman Scale Analysis	ST
"	STDNTF1	Student#s T Test	ST
"	STDNTF2	Student#s T and F Ratio - Missing Data	ST
"	SUSIEQ		ST
"	TSSA	Test Scorer and Statistical Analysis	ST
"	Z3SLS	Zellner#s three-stage Least Squares Program	ST
"	LINPROG	Linear Programming	OR

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Northwestern U.	EIDE	Easy Integrator for Differential Equations	MA
"	MATSLV	Calling Program for INISP, SOISP, DEISP (Library Matrix Subroutines).	MA
"	EIGSYS	Eigensystems of Non-Symmetric, Real, Square Matrices	MA
"	NUCROS	Cross Classification and Tabulation	ST

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
University of Pitt. (Continued)	GPSS	(General Purpose Simulation System) designed to facilitate study of the behavior and evaluation of a system whose state changes over time.	OR
"	QUIC	A program for rotated title indexing which writes variable length records up to 132 columns. (This is a program from the Univ. of Calif., not IBM's KWIC.)	LI
"	Midas	(Modified Integration Digital Analog Simulator) Provides a method for obtaining digital solutions for systems of ordinary differential equations.	OR
"	Scientific Subroutine Package	A collection of Fortran Subroutines for use in statistical and mathematical applications.	MA
"	Recode	A general purpose data management and manipulation program. It can be used to reform or recode existing data sets, for checking existing data sets, or for card-to-TAPE conversions.	CU

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
University of Pitt.	RMATX	Intercorrelation matrix program.	ST
"	Regression	A stepwise regression analysis program.	ST
"	SIMPLEX	A revised simplex algorithm for solving linear programming problems.	OR
"	SMILE	(Single precision Matrix Inversion and Linear Equations). Can be used to invert a matrix or to solve a system of simultaneous linear equations.	MA
"	SPOSE	A generalized multivariate frequency distribution program.	ST
"	UMPAFA	University of Michigan principal axes factor analysis and varimax rotation.	ST
"	BMD	(Biomedical Programs) Provides standard, statistical procedures: description and tabulation, multivariate analysis, regression analysis, time series, analysis, and variance analysis.	LS

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
University of Pitt. (Continued)	Filter Tau and Tau99	Filter Tau is a bivariate statistical program which may be used to: a)generate frequency distributions b) generate percentage tables c) measure of association (chi squares, coefficients of contingency, tau alpha, tau beta, and gamma) d) generate marginal frequency distributions on one or two digit variables e)impose controls on any bivariate option f) generate frequency distributions and percents for multiple response variables. Tau99 is a modification of the filter tau program and can handle 2-digit row variables.	ST
"	Missing Data Correlation	Calculates up to 80 by 80 intercorrelation matrix. Each variable is correlated with every other variable.	ST
"	Filter Means	(2 Programs EM1 and FM2) Provides one way analysis of variance statistics in a format similar to the filter tau program.	ST

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
University of Pitt. (Continued)	AUTOFLOW	A flow charting system-produces standardized program flowcharts automatically.	CU
"	DAM	(Data Processing and Multiple Regression Program). Permits regression analysis and other computations that can be carried out on data arranged in tabular form.	ST
"	ITEM-90	A simple data description which includes frequencies, proportions, means and standard deviations. The user specifies the ranges.	ST
"	LPXMPX	Similar to SIMPLEX with revised I/O.	OR
"	Missing Data Intercorrelation	Intercorrelation program for data with missing information.	ST
"	Esso Regression	A standard regression program that computes simple or multiple regression equations and regression statistics on up to 100 variables.	ST
"	Partial Correlations	Computes three sets of statistics: a)standard regression coefficients for each pair of variables b)multiple correlations for each variable c)the partial correlations for each pair of variables.	ST

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Texas A&M University	AIM 6	Multigroup Nuclear Reactor Core Calculations, e.g. Criticality, Breeding Ratios, Flux Distributions, Perturbation Calculations, etc.	ET
"	Wilson-Goodlett Multiple Regression Program	To perform one or more regression analyses on a given set of data, to perform a variable selection by the "step down" method, to provide a "feedback" of regression estimates and provide, other results.	ST
"	Model 1-Freeway Off-Ramp Model 2-Freeway On-Ramp Model 3-At-Grade Intersections of Diamond	To simulate the operations of a freeway diamond interchange over a wide range of traffic conditions using a microscopic simulation model.	OR
"	HEVESY	Location of Peaks in Gamma Ray Spectra from NaI (TL) or Be (Li) Spectrometers; Activation analysis.	Et
"	Least-Squares Analysis of Variance with Absorption (ABSORB)	This program provides for analysis of linear, additive models, including fitting constants for classification variates and their first-order interactions and partial regression coefficients for covariates. A special feature is that one or more classification variates may be absorbed.	ST

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Texas A&M (Continued)	HYNET	Hydraulic network analysis; Basic Hardy Cross Method is utilized.	ET
"	Probit Analysis	To describe toxicity, in terms of mortality, of graded dosages of lethal chemicals. Log dosage is computed against mortality to give LD50 (lethal dose to kill 50% of a population) and LD90 dosages. Used extensively by entomology to test new insecticides and determine development of resistance to old ones.	PS
"	X-ray Analysis of Residual Strain	The three-dimensional strain quadric is solved from a series of strain values assigned to specific direction in space. Output includes the magnitudes and direction cosigns of the three principal strains.	ET
"	Mean Vector	Calculate the Mean Vector from any number of unit vectors oriented at any angle with respect to coordinates X,Y,Z.	MA

EIN PROGRAM MIX

INSTITUTION	PROGRAM NAME	PROGRAM DESC.	PROGRAM TYPE (CODE)
Washington State U.	GEORGE	A generalized linear regression analysis.	ST
"	CRANOVA	Craner's multivariant analysis of variance or co-variance.	"
"	REX	A FORTRAN IV system for combinational screening or conventional analysis of multivariant regressions.	"

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EDUCOM

EIN NEWSLETTER

March 1969 No. 1

Steering Committee Meeting

The EIN Steering Committee met on February 27, 1969 to develop guidelines for operation. Those present were Demos Eitzer, Dan Berniti, Dave Blackwell, Lorraine Borman, E. P. Miles, Jr., Robert B. Smith, Tom Keenan and Hal King.

The Steering Committee agreed that the EIN technical representatives should be invited to meet at the Harvest House Motel, Boulder, Colorado on April 14 when the Steering Committee will present its recommendations.

Much of the discussion at the February 27 meeting dealt with the organization to be needed for support of the network and the problems of refereeing programs submitted and their documentation.

Organization

On the subject of organization, it was agreed that an executive committee of six members should be elected in April. To accomplish this, Tom Keenan will appoint an interim nominating committee to submit nominations to the technical representatives before the April meeting. In the meantime, suggestions for nominations to the Executive Committee are welcome. Please write to:

Dr. T. A. Keenan
EDUCOM
9650 Rockville Pike
Bethesda, Maryland 20014

The Steering Committee feels that the following should be standing subcommittees of the Executive Committee:

1. Nominating Subcommittee
2. Financial Subcommittee
3. Subcommittee on Refereeing
4. Subcommittee on Operations
5. Subcommittee on News Publications

The chairman of each subcommittee will be a member of the Executive Committee. The Financial Subcommittee will be the Executive Committee itself. The other subcommittees should be composed of interested and willing people whether or not they are elected to the Executive Committee.

The Executive Committee will act in an advisory capacity to the director of the EIN project and the management of EDUCOM.

Refereeing of Programs

The Steering Committee feels that it will be very important to establish a system of refereeing of programs to be published in the EIN Directory. To encourage people to referee a program, it is proposed that the institutions submitting the program provide access and time to the referee for his tests of the program, without charge.

To be able to referee and review programs we need a list of people willing and competent to do this work and the programs to be refereed. To get this started the Steering Committee adopted the following motion:

> "Dr. Keenan is directed to take steps to communicate with the institutional representatives and the technical representatives to solicit programs for submission and consideration and lists of competent people to referee programs in certain categories of interest."

Therefore, please send the name and address of potential referees, together with a statement of their special area of competency to Dr. Keenan at the address given above. As program write-ups are received, the Steering Committee will match program to referee. Guidelines to refereeing will be prepared by the staff.

Other subjects

The Steering Committee strongly recommended that the EIN Directory not be restricted to stand-alone applications programs. A criterion to be used in considering systems and sets of subprograms for publication was proposed as: such programs will be considered when a unique capability results and when the documentation includes actual sample problems.

The referrer and the referee will have to determine whether a program submitted can be effectively used by an outsider. The question was raised as to what is meant by testing of a complex system such as a Remote Job Entry system. The sense of the group was that such systems may be unreasonable to test in the same sense as a stand-alone program but that should not prohibit their entry into the directory and their use.

NSF Regional Computer Projects

Participants in EIN should be aware of the regional computer experiments sponsored by grants from the National Science Foundation. Several of these projects are publishing newsletters and have other materials of value to distant users of computer service. The ten projects are being conducted at:

Carnegie-Mellon University
    ten colleges and seven secondary schools
Cornell University
    five colleges and eleven secondary schools
Dartmouth College
    nine colleges
Illinois Institute of Technology
    nine colleges
University of Iowa
    ten colleges
Oregon State University
    five colleges
Purdue University
    seven colleges, four remote Purdue campuses and four secondary schools
St. Anselm's College
    four colleges
Southern Regional Education Board
    thirteen colleges
Stanford University
    four colleges and one secondary school

In addition to these, a group of 66 New England Colleges are developing the "New England Regional Computing Program" (NERComP). The program coordinator for this program is Mr. Roger Gaunt, addressed at Room 39-513 at the Massachusetts Institute of Technology.

On the other coast of the country, the UCLA Campus Computing Network recently held a meeting attended by representatives of about 39 California colleges plus the California State Colleges for the purpose of organizing a cooperative computer network. Mr. Kenneth Tom of UCLA chaired the meeting which resulted in formation of a working group to prepare guidelines--much like the EIN Steering Committee. The working group is chaired by Dr. Forest Harrison of the Claremont Graduate School.

Reference Manual on Computer Terminals

David Freeman at the Triangle Universities Computation Center (TUCC) has produced a very interesting reference manual on the terminals being used at TUCC. Although somewhat specialized toward local needs, the manual contains considerable information of general interest and utility. Covered are the model 33 teletypewriter, IBM models 2741, 1050, 1978 and 2780, as well as the 1130 and models 20, 25 and 30 used as terminals.

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EDUCOM

March 12, 1969

TO: EIN Technical Representatives

FROM: T. A. Keenan

The provisions of the Office of Education grant providing funds for EIN require that we determine and report costs that the participating institutions incur in connection with EIN. Examples of institutional costs include:

personnel
fringe benefits
travel
telephone
computer time

We are interested in totalling these costs in the categories shown on the tear-off slip at the bottom. However, if this breakdown is not conveniently available to you, please fill in the name of your institution, the total estimated cost, sign the slip and return it by March 30th.

- -

To: EDUCOM
100 Charles River Plaza
Boston, Massachusetts 02114

for quarter Jan. 1-March 30, 1969

Institution reporting ____________________
Personnel and fringe benefits ____________________
Travel and telephone ____________________
Computer time ____________________
Other (please explain) ____________________

Total ____________________

ehp.

Signed by ____________________

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

100 CHARLES RIVER PLAZA • BOSTON • MASSACHUSETTS 02114 • (617) 227-1805

EDUCOM

EIN NEWSLETTER

April 1969 No. 2

Report on the Publications Program

Over the past several months the EIN staff has made appreciable efforts toward development of a publications program. The EIN Newsletter will be a small part of that program. We expect to use the Newsletter to report to participants on developments, plans, meetings, difficulties, etc. We will also try to pass on interesting items not directly related to EIN. The Newsletter will be issued whenever there is material to be reported.

A draft version of a Documentation Standards Handbook has been prepared and distributed to the current mailing list of Tech Reps. This handbook is intended as a guide to what is desirable for an EIN catalog entry. Suggestions to help us in developing a revised version will be appreciated. If you have not received a copy please write to:

Dr. T. A. Keenan
EDUCOM
9650 Rockville Pike
Bethesda, Md. 20014

or

Mr. R. D. Ferguson
EDUCOM
100 Charles River Plaza
Boston, Mass. 02114

In response to an earlier request for titles of interesting computer programs, ten institutions sent in the titles of 267 programs. These have been classified and reported in a paper titled EIN Program Mix. The purpose of this paper is to present a preliminary picture of the types and distribution of programs that could be available through EIN. If you would like to receive a copy, please drop a note to either of the addresses given above.

The staff, supported by the valuable advice of the Steering Committee and other Tech Reps, is arriving at a picture of the structure of the EIN Catalog. The documentation available through EIN will contain at least two levels: 1) the catalog and 2) back-up documentation. Back-up documentation will consist of all the technical description of a program and its operating environment that we are able to obtain. It will be available on request for each program at a reasonable cost. The EIN Catalog will be divided into four basic sections and will be distributed to all participants. The four sections with their tentative content will be:

1. Description of Participating Facilities: a statement and diagram of the current equipment configuration; identification or description of the operating systems; description of the pricing algorithm in use.

2. Index of Programs: probably both by classification and by Keyword in Context.

3. Functional Abstract Section: statement of the problem to be solved and the features of the available program; approximately 300 words (or 1 page) long.

4. Catalog Entry Section: intended to make possible a preliminary use of the program described. It will consist of about 10 pages and will contain at least:
   (a) a functional abstract;
   (b) instructions to users;
   (c) a sample of input/output and pricing.

It has been suggested that some of the above sections be distributed separately. We think this idea should be evaluated after the initial distribution of the Catalog.

Some progress has been made on preparing catalog entries. As a result of a visit to Northwestern University, documentation has been obtained on about 40 programs, seven of which have been converted into catalog entries. A similar visit is planned to the University of Pennsylvania to gather documentation. Other visits will be scheduled in the near future. Our goal is to develop a library of documentation and a supply of catalog entries to support an initial distribution of an EIN Catalog in June 1969.

A preliminary version of a Network Directory has been developed that identifies and describes networking activities in North America. We assume that the Directory is incomplete and that it no doubt contains inaccurate statements. We would appreciate corrections and additions from those receiving the limited distribution of this preliminary version.

Steering Committee Report

The Steering Committee formed at the January meeting has met twice to prepare a report to serve as guidelines for the operation of EIN. The report was adopted at the Boulder meeting of Tech Reps, April 14, and will be distributed as soon as possible.

An Executive Committee of six elected members and ex officio members is recommended. Three standing subcommittees with chairmen drawn from the Executive Committee were decided on. The Steering Committee has made a strong recommendation that programs entered in the EIN Catalog be reviewed by experts so as to make the Catalog the equivalent of a professional publication for programs.

Major attention has been paid to a diagrammatic description of the functional activities necessary for the operation of EIN. Through this diagram, one can see how users, Tech Reps, the EIN staff, and external reviewers are to interact.

Boulder Tech Rep Meeting

The technical representatives met at Boulder, Colorado on April 14, 1969. They reviewed and adopted the report of the Steering Committee. The committee was then dissolved with an expression of appreciation for its fine work. A six-member Executive Committee was elected consisting of:

Dr. Daniel Bernitt	Pennsylvania State University
Dr. Lorraine Borman	Northwestern University
Dr. Demos Eitzer	The City University of New York
Dr. Thomas E. Hulbert	Northeastern University
Dr. E. P. Miles, Jr.	The Florida State University
Dr. Edward F. Staiano	Bucknell University

A motion was adopted stating that the Director of the EIN project is to be an ex officio member of the Executive Committee and its chairman. Three standing subcommittees were established. These are:

Subcommittee on Validation and Documentation (Dr. L. Borman, chairman)
Subcommittee on Billing and Accounting (Dr. D. Bernitt, chairman)
Subcommittee on Operations (Dr. E. Staiano, chairman)

Each subcommittee is to establish its own membership and report to the Executive Committee at its first meeting on May 14th.

To be effective, EIN will need the participation of many people in many roles. It will need people to work on and assist the above subcommittees. It will need people to act as external reviewers of programs and documentation that is submitted for the Catalog. It will depend on volunteers acting as professionals in furthering the use of computational facilities in education. Because of these needs, we are going to build a file of resumes of people who are willing to act in such capacities. We ask all who are interested or who can name others to send Tom Keenan the resume of the interested party. Minimally, names submitted will be added to a mailing list of "interested parties" so that they will receive future issues of the Newsletter.

Under the grant from the U.S. Office of Education and the National Science Foundation, EIN has approximately fourteen months remaining in which to publish and maintain a catalog and to demonstrate that people will make use of remote computational facilities. Therefore, it will become important to find users for the programs being catalogued. This fact was discussed by the Tech Reps at the meeting. Many felt that some kind of informational campaign will be required to bring the availability of the EIN service to the notice of users.

Partially in response to the need to attract users and to avoid putting any unnecessary barrier in the way of the user, it was proposed that some kind of "balance of payments" system could be developed so that credit rather than cash could be used for at least some of the anticipated off-campus use. This interesting idea has been referred to the Subcommittee on Billing and Accounting for further development.

To encourage submission of programs to the Catalog, the Subcommittee on Operations will similarly consider a plan by means of which professional journals and departments in colleges and universities will be notified when programs pertaining to those professional subject areas are published in the Catalog.

The Tech Reps further decided that the EIN Catalog should not be limited to stand above applications programs. It was agreed that certain sets of subroutines and certain programming systems (e.g., GPSS) also should be considered for cataloging even though complete (or adequate) descriptions may not be possible within the limitations of the catalog entry itself.

SIGUCC to Meet in Boston

The ACM Special Interest Group on University Computer Centers has organized a panel discussion on time-sharing services provided to smaller institutions through university networks. The panel will be led by Dr. Arthur Melmed of the National Science Foundation and will be held at the Spring Joint Computer Conference, May 14th at 8 PM in the Independence Room East.

IIT Announces Spring Seminar

A retreat-type seminar is planned for May 9th and 10th at Chateau Louise, Dundee, Illinois. Seven workshops will attempt to deal with specific computer-based teaching exercises. For further information, contact Project Manager, Ronald Stiff, IIT Regional Computer Network, Chicago, Ill. 60616.

EIN TECH REPS MEET

Prior to the Spring Council, the Educational Information Network (EIN) Technical Representatives met at Boulder to review the report of the Steering Committee. The report set forth guidelines for the operation of EIN, recommended the election of an Executive Committee of six members, and further recommended that programs entered in the *EIN Catalog* be reviewed by qualified people before publication. The Tech Reps present adopted the report, and the Steering Committee was then dissolved.

An Executive Committee of EIN was elected, with Thomas Keenan, Executive Director, EIN, as *ex officio* member and Chairman. Other members are:

Daniel Bernitt	The Pennsylvania State University
Lorraine Borman	Northwestern University
Demos Eitzer	The City University of New York
Thomas E. Hulbert	Northeastern University
E. P. Miles, Jr.	The Florida State University
Edward F. Staiano	Bucknell University

The Chairman reviewed the EIN publications program to date. An *EIN Newsletter* has been started, and a preliminary version of a *Directory of Information Networks and Network Activities* prepared. An *EIN Program Mix*, listing the programs submitted by participating universities, has been published for participants in EIN, along with a draft version of a *Documentation Standards Handbook*. The latter defined the form of a catalog entry for the *EIN Catalog* and offered a model. The Tech Reps accepted the format, with some modifications, as a working model for the initial effort. Work is now in progress on the *EIN Catalog;* it will have four basic sections:

Description of Participating Facilities;
Index of Programs;
Functional Abstracts;
Catalog Entries.

In addition, backup documentation, consisting of all of the technical description of a program and its operating environment that has been collected, will be available on request for a reasonable cost.

Further information can be obtained from

Dr. T. A. Keenan
EDUCOM
9650 Rockville Pike
Bethesda, Maryland 20114

EIN Tech Reps consider the Steering Committee report.

EDUCOM

EIN PROJECT

DOCUMENTATION
STANDARDS
HANDBOOK
FOR
EIN SOFTWARE CATALOG

June 1969

Prepared under a
Joint Grant from the
U.S. Office of Education
and the
National Science Foundation
Grant No. OEG-0-8-080697-4468 (007)

100 CHARLES RIVER PLAZA BOSTON, MASS. 02114 617-227-1805

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TABLE OF CONTENTS

Documentation Standards Handbook for EIN Software Catalog. . . 1
Introduction. . . 1
Documentation Criteria. . . 2
EIN Standard Documentation Requirements. 4
Descriptive Title. . . 4
Calling Name. . . 4
Installation Name. . . 4
Author(s) and Affiliation(s). . . 4
Language. . . 4
Computer. . . 4
Program Availability. . . 4
Contact. . . 4
Functional Abstract. . . 5
User Instructions. . . 6
Cost Estimate. . . 6
Sample Input/Output Models. . . 7
Model Catalog Entry. 7

DOCUMENTATION STANDARDS HANDBOOK FOR EIN SOFTWARE CATALOG

Introduction

The Educational Information Network (EIN) is an EDUCOM program, jointly sponsored by the National Science Foundation (NSF) and the U. S. Office of Education. The major objective of the program is to enable EDUCOM colleges, universities, and educational service organizations to share their computational resources among interested users at member institutions. To accomplish this objective, a catalog describing the available resources is required, as well as some specific procedures for creating and maintaining the efficient use of the resources.

The catalog listings will provide the information necessary to permit a user to identify and locate those computational resources of potential utility. After selecting the resource that best answers a particular need, the user will then prepare data according to the required format and send the input to the selected resource center for processing. A record-keeping system will assure the resource center of reciprocal credit or payment for its services and will, in addition, monitor the progress of resource utilization throughout the network.

To expedite the technical aspects of this process, it is necessary for EDUCOM to receive properly prepared documentation from participating institutions through their designated technical representatives. The purpose of this handbook is to define the documentation standards for programs submitted.

The EIN staff recognizes that present documentation at participating institutions does not exist in any common format, and that in many instances the documentation submitted will not easily meet the format specified in this handbook. However, it is imperative that all information requested herein be included, regardless of the format chosen.

It is hoped that this handbook will establish a useful standard for documentation, clarify the definition of a catalog entry, promote more efficient maintenance and use of the catalog, and thereby contribute to the efficiency and effectiveness of the EIN program.

Documentation Criteria

Documentation that meets the EDUCOM standards must include the amount of information necessary to inform a prospective user of the precise problem that the program was designed to solve, and to enable a user to prepare the required input and obtain the desired results. For extended systems of programs, the catalog entry should identify the capabilities of the system so that the reader can judge the value of studying references in more detail.

The central item in a catalog entry will be a 300-word program abstract that summarizes the functional features of a program and clearly states those processing options which make it useful. While abstracting is known to be somewhat of an art form, we believe that careful attention to detail in the content of the abstract is more important than strict attention to form.

Each catalog entry will be carefully checked for the inclusion of the information items specified in this handbook. Those deficient in terms of content will be returned to the submitter so that he can supply the missing items.

Catalog entries and supporting documentation will be sent to an authoritative reviewer before inclusion in the catalog. The reviewer will recommend concerning publication, based on the uniqueness of the program, the sufficiency and clarity of the documentation, and his experience in using the program at a distance.

EIN STANDARD DOCUMENTATION REQUIREMENTS

Field	*Definition*
0. DESCRIPTIVE TITLE	This title is the name that describes what the program does.
1. CALLING NAME	This item of information includes the call name or loading name of the program, including any symbols that must accompany the program name for identification purposes in the center's library.
2. INSTALLATION NAME	Enter the name of the university computer center at which the program is presently operating and the location (if different from the university).
3. AUTHOR(S) AND AFFILIATION(S)	The author of the program is usually the person who did the actual programming and design work. If these tasks were separate, please list both parties and their present departmental affiliations (specific office in the university or particular research laboratory). An author may request that his name not appear in the published catalog.
4. LANGUAGE	The programming language in which the program is written.
5. COMPUTER	The computer on which the program executes.
6. PROGRAM AVAILABILITY	Specify whether program decks and/or listing are available on user request. Identify the program libraries from which copies may be obtained.
7. CONTACT	Person(s) to contact at the operating installation for further information.

Field (continued)	*Definition (continued)*
8. FUNCTIONAL ABSTRACT	This information is central to the catalog entry. It should contain the following. *a.* *DESCRIPTION OF THE PROGRAM*— The problem that the program is designed to solve should be described in such a way as to help the reader to identify elements that may be analogous to his own problem. While this description must be brief, it should clearly identify the conceptual limitations of the program. *b.* *METHOD OF SOLUTION*— When the method of solution is well known or documented in standard publications, it should be identified by reference. Modifications to well-known methods, new methods, or novel combinations of methods should be fully described to indicate their applicability. *c.* *SPECIAL FEATURES OF THE PROGRAM*— Processing features and options that contribute to the uniqueness of the program should be summarized. Types of input and output should be discussed in terms of their potential value in solutions of problems. *d.* *REFERENCES*— Any books, periodicals, or other supporting literature related to the program and its methodology should be listed for the reader's benefit.

Field (continued)	*Definition (continued)*
9. USER INSTRUCTIONS	This item will be the basis for data preparation. Hence, instructions regarding data requirements should be clearly and explicitly stated as follows. a. *INPUT PREPARATION FORMATS AND OPTIONS*— These instructions provide the user with the information necessary to prepare his data for input to the program in terms of the (1) precise definition of all variables; (2) exact format and arrangement of input parameters; (3) required card or tape format for all input data and sequence of control statements, if required, for processing. b. *OUTPUT FORMATS AND OPTIONS*— These instructions will clearly explain all output variables and the choices of formats available for selection. Some note regarding accuracy of results also should be included. c. *DATA RESTRICTIONS*— The user must be provided with a full explanation of any data restrictions such as those constituting illegal input, numerical or data-set limitations, and the number of or size of the data sets that can be handled by the program. d. *PROCEDURAL REFERENCES*— Manuals, detailed documentation, etc., required to use the program.
10. COST ESTIMATE	A statement of the number of computational units used for processing the sample problem should be provided to give the user an idea of potential time and costs.

Field (continued)	*Definition (continued)*
11. SAMPLE INPUT/OUTPUT MODELS	This item will help the user to understand all of the aforementioned information quickly and easily. A sample test case with graphic illustration (printouts) of real results provides a clear example of the program's features. A description of the sample problem and the input data required for processing should be included.

Model Catalog Entry

A model catalog entry for a program submitted by Northwestern University has been reproduced on the following pages. The entry is representative of the type that we hope to receive from submittors.

Constructive suggestions for improvement of the format and/or the definitions are welcome. Any suggested changes will be placed befor the EIN Executive Committee.

DESCRIPTIVE TITLE	FORTRAN Program for Evaluating Internal Consistency and Single-Factoredness in Sets of Multilevel Attitude Items
CALLING NAME	ATTANAL NUCC048
INSTALLATION NAME	Vogelback Computing Center, Northwestern University
AUTHOR(S) AND AFFILIATION(S)	Donald G. Morrison, Council for Intersocietal Studies, Northwestern University Donald T. Campbell, Department of Psychology, Northwestern University Leroy Wolins, Iowa State University
LANGUAGE	CDC FORTRAN IV
COMPUTER	CDC 6400 (3.1 O.S.)
PROGRAM AVAILABILITY	Deck and listing presently available
CONTACT	Lorraine Borman, EIN Technical Representative, Vogelback Computing Center, Northwestern University, 2129 Sheridan Road, Evanston, Ill. 60201. Tel.: (312) 492-3682

FUNCTIONAL ABSTRACT

ATTANAL is a FORTRAN IV program for evaluating internal consistency and single-factoredness in sets of multilevel attitude (scale) items. The user may test the assumption that responses summarized in single scores reliably refer to a common trait, attitude, or factor being measured.

The analytical method employed avoids the Guttman unidimensionality requirement commonly associated with a reproducibility coefficient. Arbitrary or chance levels of reproducibility as well as singular tests of significance are replaced by measures of high internal consistency, reliability, and single-factoredness. Dichotomously scored items are replaced by multilevel responses, thus reducing the occurrence of irrelevant difficulty factors among the intercorrelation of items.

continued

The program operates on data cards containing one-digit scores for each item; these are converted from response language to a scoring language to emphasize the significance of large scores. Separate analysis of Pro- and Con-items minimizes the effects of response-set and direction-of-wording effects. The polar-choice format of responses eliminates ambiguity of response effects and allows attitudes to be located on dimensions anchored by positive statements at either pole.

The program produces (for each item and the total set) the means, standard deviations, and a table of intercorrelations among items and sums. Using the Spearman-Brown Corrected Split-Half Method of Reliability, the program then produces a Kuder-Richardson Coefficient of Reliability based on item variances proportional to the number of items scored.

A modified factor-analysis procedure is applied to the data to obtain a test of single-factoredness. Using the intercorrelations among items, the program approximates optimal factor loadings and produces a commonality estimate (h^2) for each factor. A convergent solution is acceptable only if there are no negative factor loadings. If no convergent solution is found within 20 iterations, the program halts and prints the last iteration.

The inter-item correlation matrix, the residuals matrix, as well as the mean and sigma for residuals is also reported. A Lawley chi-square test of significance is then applied to residuals, and the program produces a listing of factor loadings, the residuals matrix, and the Lawley chi-square with appropriate degrees of freedom. In addition, the program computes an index that purports to measure the relative closeness of each measure to single-factoredness; this index should approach 1.0 in single-factoredness tests.

USER INSTRUCTIONS

Data Format Regulations

A. Several separate sets of data can be run by following one set of control cards and data with another set for as many sets as desired. Up to (47) items may be correlated and used in the analysis. There is no limit to the number of subjects. Each item in the scale must be classed as either A-positive (Pro-) or B-positive (Con-) for certain analyses.

B. Control Cards are to be punched as follows.

1. Problem Cards

Columns	*Name*	*Contents*
1- 2	ITEM	number of items in scale
3- 5	NOSUBJ	number of subjects
6- 7	NOXTR	number of extra variables to enter correlation analysis only
8-12	blank	
	The following	columns contain 1 if item is A positive 0 if item is B positive
13	first item	
14	second item	
15	third item	
⋮	⋮	
59	47th item (if used)	

2. Title Card

Columns 1-53, which may contain any alphanumeric information.

This is used to title the output.

3. Variable-Format Card

The format card specifies the column locations of the data. It is best illustrated by example: for a typical 8-item scale (10 X, 8 F 1.0, 2 F 2.0, F 3.0, 5 F 1.0), which means:

a. skip the first 10 columns (10 X)
b. take the 8 items from columns 11-18 (8 F 1.0)
c. A-positive total in columns 19-20 } (2 F 2.0)
   B-positive total in columns 21-22 }

continued

d. grand total in columns 23, 24, 25 (F 3.0)
e. five extra items in columns 26-30 (5 F 1.0) to enter correlation analysis only.

C. Data-Card Preparation

Data cards should be prepared in the following manner.

1. The user should use the first group of columns for identification of the subject and any other information that would be useful to have with the data cards. This group of columns may be as large as is needed. The variable-format card will contain instructions to skip these columns on reading the data cards. For example, for a 10-column I-D, the variable format will begin (10X . . .). This information is not necessary so A may be absent.

2. The items on the scale follow next and take up as many columns as necessary.

3. The next three items are

   a. the sum of the A-positive scores;
   b. the sum of the B-positive scores;
   c. the sum of all the scores for that subject.

4. Next are any other measurements that may be desired. These may be entered into the analysis of correlation, mean, and standard deviation without disturbing the item analysis of the elements of Part 2.

D. Card Order

1. NUCC system cards

2. Control cards

   a. problem card
   b. title card
   c. format card

3. Data cards

(2 and 3 above may be repeated for other sets of data as required.)

SAMPLE INPUT

```
VLCRR.CH[redacted].CM45700.   ATTANAL
LIBRARY(ATTANAL)
LGO.
08072        10010011
                 ENGINEERING MANAGEMENT   J. UTTERBACK
(       6X.8F1.0.2F2.0.F3.1)
022    434444431416304
022    444343441515301
022    444343441515300
022    433443241314272
022    044344441611274
022    434443141413272
022    334341331113241
022    433344141412262
022    313344441214262
022    343344131411250
022    334334241511262
022    334334241511262
022    323334231211232
022    413431440915242
022    423334131211242
022    344441141312252
022    330330340712192
022    344341231212242
022    334144141509241
022    313443231013234
022    434321241211234

                 .
                 .
                 .

022    132413110907164
022    233132121007171
022    132322231008162
022    123421130908174
022    103330200309123
022    141214231206180
022    122233220908172
022    120314210707142
022    024112131103144
022    201213130706135
022    131401010605113
022    031400010504090
022    113320220608144
022    030100300304073
022    124114111104152
022    033200200604104
022    120300320407110
022    111321100307102
022    120232110507122
022    110400100601072
022    110112100304072
022    010211200205070
022    443003001004142
022    000100000001010
022    000000110101024
022    110000010201034
```

SAMPLE OUTPUT

```
0807201   22  ENGINEERING MANAGEMENT   J. UTTERBACK          01100101
NUMBER OF VARIABLES =  11

NUMBER OF SUBJECTS IN THIS GROUP =      72
VARIABLE    MEAN   STD. DEV. VARIANCE     SUM     SUM OF SQS.
 ITEM01     1.903    1.416     2.004    137.00          403.00
 ITEM02     2.556    1.255     1.574    184.00          582.00
 ITEM03     2.333    1.538     2.366    168.00          560.00
 ITEM04     2.569    1.161     1.347    185.00          571.00
 ITEM05     2.278    1.567     2.457    164.00          548.00
 ITEM06     2.153    1.526     2.328    155.00          499.00
 ITEM07     1.875    1.186     1.407    135.00          353.00
 ITEM08     2.333    1.404     1.972    168.00          532.00
 A POS.     9.444    3.845    14.786    680.00         7472.00
 B POS.     8.556    3.623.   13.124    616.00         6202.00
 GRAND     18.242    6.685    44.689   1313.40        27131.54
CORRELATION MATRIX.

R MAT   SECTION  1

  VAR
ITEM01   1.000   .174   .474   .197   .526   .183   .118   .548   .507   .733   .692
ITEM02    .174  1.000   .246   .089   .264   .190   .274   .245   .567   .325   .500
ITEM03    .474   .246  1.000   .105   .516   .224   .062   .613   .765   .492   .710
ITEM04    .197   .089   .105  1.000   .020   .069   .216   .202   .195   .453   .360
ITEM05    .526   .264   .516   .020  1.000   .212   .307   .604   .570   .774   .747
ITEM06    .183   .190   .224   .069   .212  1.000   .143   .265   .620   .260   .496
ITEM07    .118   .274   .062   .216   .307   .143  1.000   .195   .229   .590   .447
ITEM08    .548   .245   .613   .202   .604   .265   .195  1.000   .765   .636   .784
A PCS.    .507   .567   .765   .195   .570   .620   .229   .765  1.000   .600   .900
B PCS.    .733   .325   .492   .453   .774   .260   .590   .636   .600  1.000   .887
GRAND     .692   .500   .710   .360   .747   .496   .447   .784   .900   .887  1.000
        ITEM01 ITEM02 ITEM03 ITEM04 ITEM05 ITEM06 ITEM07 ITEM08 A POS. B POS. GRAND
```

continued

```
0807201   22  ENGINEERING MANAGEMENT    J. UTTERBACK           01100101
                                         RELIABILITY STUDY


                    SPLIT-HALF RELIABILITY=  .750

                    KUDER-RICHARDSON FOR TOTAL =  .748

                    KUDER-RICHARDSON FOR A POS. TOTAL=  .726

                    KUDER-RICHARDSON FOR B POS. TOTAL=  .447

INFERED AVERAGE INTER-ITEM CORRELATION


                    FROM SPLIT-HALF     .273

                    FROM KUDER-RICHARDSON(TOTAL)     .270

                    FROM KUDER-RICHARDSON(A POS)     .399

                    FROM KUDER-RICHARDSON(B POS)     .168
A+A+   AVE.=  .246
B+B+   AVE.=  .275
A+B+   AVE.=  .307
TOTAL  AVE.=  .287

CORRECTED ITEM TOTAL CORRELATIONS

ITEM   R(IT)COR
  1        .554         A POS.
  2        .340         B POS.
  3        .563         B POS.
  4        .196         A POS.
  5        .610         B POS.
  6        .295         B POS.
  7        .289         A POS.
  8        .679         A POS.
```

continued

```
0807201   22  ENGINEERING MANAGEMENT   J. UTTERBACK
               ITERATION TO FIRST FACTOR LOADINGS          01100101
SUM    2.221  1.483  2.240   .899  2.449  1.287  1.315  2.671

H SC    .307   .115   .317   .038   .372   .087   .083   .462
E      2.527  1.598  2.557   .937  2.821  1.374  1.348  3.132
A(I)    .625   .395   .632   .232   .698   .340   .346   .775
H SC    .391   .156   .400   .054   .487   .115   .120   .600
E      2.611  1.639  2.640   .953  2.936  1.402  1.435  3.271
A(I)    .635   .399   .642   .232   .714   .341   .349   .796
H SC    .404   .159   .413   .054   .510   .116   .122   .634
E      2.624  1.642  2.652   .953  2.959  1.403  1.437  3.304
A(I)    .637   .398   .644   .231   .718   .341   .349   .802
H SC    .406   .159   .414   .053   .516   .116   .122   .643
```

continued

```
0807201   22  ENGINEERING MANAGEMENT   J. UTTERBACK        01100101
PREDICTED CORRELATICN MATRIX

PRED R  SECTION  1

  VAR          ITEM01 ITEM02 ITEM03 ITEM04 ITEM05 ITEM06 ITEM07 ITEM08
ITEM01          0.000   .254   .410   .147   .458   .217   .222   .511
ITEM02           .254  0.000   .257   .092   .286   .136   .139   .320
ITEM03           .410   .257  0.000 [illegible]9  .462   .219   .225   .516
ITEM04           .147   .092   .149  0.000   .166   .079   .081   .185
ITEM05           .458   .286   .462   .166  0.000   .245   .251   .576
ITEM06           .217   .136   .219   .079   .245  0.000   .119   .273
ITEM07           .222   .139   .225   .081   .251   .119  0.000   .280
ITEM08           .511   .320   .516   .185   .576   .273   .280  0.000

RESIDUAL MATRIX

RESID   SECTION  1

  VAR          ITEM01 ITEM02 ITEM03 ITEM04 ITEM05 ITEM06 ITEM07 ITEM08
ITEM01          0.000  -.080   .064   .050   .069  -.034  -.104   .037
ITEM02          -.080  0.000  -.011  -.003  -.022   .055   .135  -.074
ITEM03           .064  -.011  0.000  -.044   .054   .005  -.163   .097
ITEM04           .050  -.003  -.044  0.000  -.146  -.009   .135   .016
ITEM05           .069  -.022   .054  -.146  0.000  -.033   .056   .028
ITEM06          -.034   .055   .005  -.009  -.033  0.000   .024  -.008
ITEM07          -.104   .135  -.163   .135   .056   .024  0.000  -.085
ITEM08           .037  -.074   .097   .016   .028  -.008  -.085  0.000

 MEAN RESIDUAL EQUALS     .00031
SIGMA OF RESIDUALS IS     .07370
```

continued

```
NORTHWESTERN UNIVERSITY MAXIMUM LIKLIHOOD PROGRAM    TO EXTRACT ONE FACTOR
  FINAL RESULTS --          NUMBER OF ITERATIONS=    6     RESIDUAL SUM OF SQUARES=  9.3644436IE-01
COMMUNALITIES

        .449729      .110522      .502127      .037205      .550799      .098629      .069792      .670552
SPECIFIC VARIANCES

        .550271      .889478      .497873      .962795      .449201      .901371      .930208      .329448
FACTOR LOADINGS

        .670419      .332449      .708602      .192887      .742159      .314051      .264182      .818872
     CORRELATION INPUT MATRIX AND RESIDUAL MATRIX
       1.000000      .173546      .474258      .197008      .526413      .182395      .111474
       -.049401     1.000000      .245679      .089189      .264174      .100447      .274464      .547861
       -.000948      .010103     1.000000      .105181      .515090      .224017      .061760      .245146
        .067655      .025063     -.031501     1.000000      .020214      .069473      .216142      .512428
        .028708      .017444     -.009910     -.122930     1.000000      .211661      .306630      .201634
       -.027614      .086041      .001477      .008895     -.021415     1.000000      .143000      .504632
       -.058490      .186641     -.125442      .165175      .110765      .060034     1.000000      .265117
       -.001290     -.027087      .032667      .043684     -.004101      .017940     -.021424      .194507
CHI-SQUARE FOR LAWLEY TEST=  31.31993                                                           1.000000
NO DEG. FREEDOM IS     20

                                       WOLINS  INDEX OF SINGLE FACTOREDNESS
SIGMA    M                     .3082   SIGMA OF RESIDUALS EQUALS     .0491   EXPECTED  SIGMA          .0411
 INDEX EQUALS      .9348
```

COST ESTIMATE

The job listed on the Sample Input consisted of 72 cases and 8 items. Total running time was 2.417 seconds for central-processor time and 24.159 seconds for peripheral-processor time. Chargeable computer time was $1.00 (Northwestern University minimum job charge).

Charge to user = computer time + postage and handling + EIN overhead

= $1.00 (NU minimum) + $15.00 + $3.20 = $19.20

CONTENTS—ATTANAL

pages	
1,2	Identification & Abstract
3,4	User Instructions
5–10	I/O
11	Cost—Contents

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EDUCOM

EIN NEWSLETTER
August 1969 No.3

The EIN Staff

The staff working on the EIN project is divided among the offices in Boston and in Bethesda. In Bethesda, Dr. Thomas A. Keenan, the Executive Director of the project is assisted by Mrs. Barbara Samakow. In Boston, the cataloguing and production activities are being handled by Jean Doty and Bob Schmidt. Bob will be a senior next year at MIT, majoring in the Computer Science option in Electrical Engineering. We hope to retain his services part time when he returns to school in the fall. Production typing is done in Boston by Miss Faye Jordan and Mrs. Joan Vigersky.

Documentation Standards Handbook

In recent weeks, the Handbook has been revised, printed, and distributed. If you need extra copies, please send your request to the Boston office. It is hoped that the standards described in the handbook will be used by participants for their own documentation so that entries can be made in the *EIN Software Catalog* with comparative ease.

EIN Software Catalog

The initial catalog distribution, consisting of 12 programs from two institutions (about 230 pages) is currently being printed. It is expected to be distributed 1 August. The staff is working on the first supplement, which should increase the content to about 25 programs from five institutions. The supplement is scheduled to go to printing 15 August and to be distributed 1 September.

Executive Committee

The six-member executive committee of EIN has made meetings at Northwestern University (14 May) and at The Pennsylvania State University (27 June). Another meeting is scheduled in early August to review progress, to schedule coming activities, and to lay the groundwork for the EIN portion of the EDUCOM Council meeting to be held at Notre Dame University on 14-15 October.

100 CHARLES RIVER PLAZA • BOSTON • MASSACHUSETTS 02114 • (617) 227-1805

EDUCOM
EIN PROJECT

26 September 1969

TO: EIN Technical Representatives

FROM: J.C. LeGates

SUBJECT: Initiation of EIN Service

The EIN service will become operational at the EDUCOM Fall Council. Accordingly, the EIN Workshop will be an actual working session. Its purpose will be to acquaint the attendees with the details of the system.

Initially, the service will be an administrative network. Each EIN technical representative at a resource node will be able to make his campus' facilities available to the Network. Each EIN technical representative, whether at a resource or a user node, will be able to make the Network available to his campus. EDUCOM will make available a procedure to handle the ordering and billing.

We would like to remind you that participation will be the foundation of success. The more the Catalog lists, the more powerful the resource that each member can tap. At the same time growing acceptance of the Catalog will bring increasing prestige to the authors included. The *EIN Software Catalog* is the only scholarly medium that offers publication, recognition, and direct utilization of items of academic software. It also provides a standard of user-oriented documentation that, by its very existence, tends to overcome some of the costly diversity and duplication of academic computing.

Your participation in EIN can help to make this service a national intellectual resource. We encourage you to remind your department heads and deans of the potential that it offers.

If you can come Sunday evening, please look me up at the President's reception. Otherwise, I look forward to meeting you at the Monday Workshop.

John C. LeGates

100 CHARLES RIVER PLAZA • BOSTON • MASSACHUSETTS 02114 • (617) 227-1805

EDUCOM

29 October 1969

MEMORANDUM

TO: All EIN Technical Representatives

FROM: John C. LeGates

CONCERNING: Information about the Use of the Network

Enclosed is a copy of the letter which will be sent to all new technical representatives as they join up. This may also be useful to you. If you have any comments or criticisms, please let me know.

JCL:jev

Enclosure

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

100 CHARLES RIVER PLAZA • BOSTON • MASSACHUSETTS 02114 • (617) 227-1805

EDUCOM

Dear Sir:

I understand that you are to be the EIN Technical Representative from your institution. Welcome to the EIN Network, and the ranks of those on whom it depends.

As you undoubtedly know, the EIN Project is currently an administrative network which makes the programs at one member institution available to all other members. The program is run at the resource institution. At the moment, the interface is by mail, partially through the EDUCOM central office.

The central office concerns itself with the collection of programs, the publication and distribution of the EIN Software Catalog, and billing and accounting for the use of the Network.

You will be asked to:

*Help us discover programs to list in the Network. These should be of interest within their field or of general interest, and in operable condition on your system. We urge you to stimulate interest among the faculty and the Computing staff to list programs with the Network. Once available, programs should be submitted to the EIN office. Priority will be given to those programs submitted in accordance with the Documentation Standards Handbook.

*Help the EIN Technical Representatives of other institutions who wish to use a program that you have listed. You will be their official contact at your institution. If the documentation has been done well, this should be very little work.

*Help users at your institution to use the Network. Make the Catalog available to faculty who may wish to browse or to examine programs in it. Explain the procedures of ordering, usage, paying, etc. Initiate each account. Funnel purchase orders, invoices, etc., to the proper parties. This should also be relatively easy. If it is not, please tell us what's wrong.

*Attend an EIN Technical Representatives meeting twice a year.

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

You have in this package, the following materials:

*A one-page description of EIN. This may be of use to you in making information available around the institution, in "advertising" the Network, or in answering general questions.

*Five copies of the Documentation Standards Handbook, one of the cornerstones of the system. It describes the method of documenting a program in order to make it available through EIN. Please feel free to distribute this booklet to anyone who might be interested in listing a program. We will make additional free copies available on request, to you or to others. We are quite pleased that several institutions have adopted this handbook as a standard for their own internal documentation.

*Two copies of the EIN Software Catalog. These will be augmented by regular supplements, which you can expect to receive monthly. We recommend that you appoint a person (perhaps yourself) to make sure that the Catalogs are updated every time a supplment arrives. You may wish to keep one in the library. Additional Catalogs are available to anyone who wants them at a rate of $75/year.

*Ten copies of the Account Initiation Form. Every time you wish to open an account between a new user at your institution and a new resource in the Network, you will use one of these forms. There will be one account for each user-resource pair.

*Fifty copies of the EIN Job Run Form to use in ordering individual jobs. No Job Run Form can be used at an institution unless a valid account has been previously established there.

The EIN accounting system requires credit establishment prior to account usage. You may establish credit with the Network by depositing cash, opening a purchase order, depositing computing power, or supplying computation through the Network. There is no upper limit to the credit except in the form of deposited computing power. You may deposit computing power only if you have one or more programs listed in the Catalog, and never in excess of $1000. A credit balance in your institutional account will be settled in cash.

No job will be run without the prior establishment of a valid account at that institution. As a resource, you should enforce this rule by not running jobs until you have received a verified account intiation form from us. We will verify the form only when the credit is on hand to cover it.

In general, it is wise to negotiate questions of finance with the EIN office, and questions of a technical nature with the resource or user. It is not our intent to interpose ourselves into the flow of information.

The EIN Network will add an overhead charge to the total bill submitted by the resource institution. There may thus be a temptation to bypass the Network and avoid the overhead once a users and resource have established a good working relationship. Since EIN must become self-supporting over the next two years, a reduction in the flow of funds through EIN will limit our ability to expand our service, recruit new committed institutions, and expand the Catalog; operations from which everyone benefits.

We are always open to ideas, and our methods are never established beyond review. Therefore, please feel free to offer suggestions, comments and criticisms at any time.

We appreciate your interest and look forward to the contribution that you will make as a member of EIN.

Sincerely,

John C. LeGates
Manager of Operations
JCL:fj

Enclosures

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EDUCOM

31 October 1969

MEMORANDUM

TO: EIN Executive Committee

FROM: John C. LeGates

CONCERNING: Extension of EIN Membership Eligibility

We have been approached by a number of organizations who are interested in either using or listing with EIN, or both. Some of these are ineligible for membership in EDUCOM as the rules now stand. Cooperative Venture in College Curriculum Development, New Hampshire College and University Council, and COM MED (Computers in Medicine) are examples.

I feel, as does Jordan, that we should have a category of membership called perhaps "EIN Associate." The Associate would be entitled to all the privileges and benefits of EIN, including two free copies of the Catalog. Requirements shall be:

(1) the associate is not eligible for membership in EIN
(2) the associate must appoint an EIN technical representative
(3) the associate must be nonprofit.

Dues shall be $250/year.

In addition, we feel that the two following points should be clarified:

(1) Should a profit-making corporation be permitted to be a resource to EIN? This again would require a special category of membership (an EIN Resource Associate?)

The Resource Associate would be entitled to list programs with the Network without limit, but subject to EIN review. He will receive two copies of the Catalog. He must

(a) be ineligible for membership in EIN
(b) appoint an EIN technical representative

Dues will be $N/year ($250?). Should he pay $M/listing in addition?

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

(2) Should any organization be permitted to use the Network, provided that he do so through an EIN member in a relationship acceptable to that member? This capability would be especially useful to the very small college, hospital, etc., whose administration will not release $250 for membership, but who has a professor who wishes to use the Network.

Because the organizations listed above are pressing us for an answer, I urge you to discuss these ideas among yourselves and with me. Let's try to get a vote, even if only by letter or phone, as quickly as possible.

John C. LeGates / J.V.

JCL:jev

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EDUCOM

3 November 1969

MEMORANDUM

To: Jordan J. Baruch

From: John LeGates

Re: Proposed activities relating to unbundling

It seems to me that unbundling will precipitate a search for cheaper ways to obtain or access software. This search will occur simultaneously at almost every computer center in the country, and will lead to innovative resource-sharing methods. Operation of some of these methods can be enormously cost-effective, due to the great added expense with which everyone will be faced.

EDUCOM, with its pre-committed network of resources should be in an unusually good position to help them be shared; an activity which is specifically encouraged by charter.

Accordingly, I suggest that we collect the following from each member:

1. Documentation on all standard packages which run there.
2. Documentation on all special programs developed there and not available elsewhere.
3. A commitment to run these for other members, up to the limits that they can handle. (This we already have in a more limited sense.) They are free to charge what they wish.

This we should make available in a massive and convenient manner to all our members. Suggestions: microfiche of each member's documentation on deposit with each member; microfilm of each member's documentation on file here, with a quick copy system; on-line, interactive access to the documentation here (future).

We should devote our main energies to collecting the material as listed and indexing it. The index, very elaborate and as cross- and multiple-listed as possible, would merely refer to the documentation. Suggestions for index location from the resource would be incorporated. It would be updated frequently (monthly) and distributed on microfiche. The material would be updated less frequently (yearly), perhaps by a total purge. With the press of time, and the desperateness of the search which is already beginning, we might begin without the index, just to make the material available fast enough.

Certain of the wiser decisions of EIN should be carried into this operation.

1. The programs will be run at the resource.
2. EDUCOM will be uninvolved in the technical negotiations and operations
3. EDUCOM will operate the accounting system for transactions among the members. Like the EIN system, there will be no extra formalities for the members, and a surcharge will be added. This can be very small (20% at first, reduced later).

The materials submitted will be of random quality and documented to no uniform standard. They will undoubtedly contain much more chaff than wheat. A system should exist whereby those that are well documented, of more than average interest, and show frequent use can be pulled out and made into a more orderly corpus. This would be concisely indexed, generally distributed, and available for browsing. It would help break down the barrier between user and programmer by its readable and easily usable nature. It would be cross-indexed into the general file, to lead users into more detailed programs where necessary. The general file would in turn be the source of material for this one.

Precisely such a system already exists in the form of our present EIN project, whose per se effectiveness would be multiplied considerably by affiliation with the larger scheme suggested by this memo.

Considering the energy and money that unbundling will release to obtain software, I anticipate that this operation will save the members money, and still be self-supporting and self-growing almost from the start. It might also make every eligible institution suddenly want to join EDUCOM. Several of our members have suggested that we address ourselves to this problem, and one has encouraged this particular plan. It seems that the support is there.

JL/chp

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EDUCOM

19 November 1969

MEMORANDUM

TO: EIN Executive Committee

FROM: John C. LeGates

CONCERNING: Remote Access of Resources

I would like to be able to list programs in the EIN Software Catalog as being accessible by the user on his own terminal, but on the resources computer.

This can be accomplished, I feel, by the following rather easy changes:

(1) Include among the offerings of EIN, "Programs will be run at the resource institution, but may be accessed from any location and by any means acceptable to the resource."

(2) Introduce a special procedure for programs accessed remotely. This will be as follows:

> The user will submit an Account Initiation Form, via the EIN office as usual. The EIN office will verify it when the appropriate credit is established, and send it on to the resource. Upon receipt of the verified Account Initiation Form, and not before, the resource will issue to the user the necessary code numbers, access information, and so on. The user is then free to use the resource; no Job Run Form is required. The resource will invoice EIN.

We have been approached by Professor Stolurow of Harvard, who has a few such programs that he would like to list with us.

JCL

John

JCL:jev

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

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EDUCOM

MEMORANDUM

TO: EIN Technical Representatives

FROM: John C. LeGates

Enclosed is a partial list of the programs which have been offered to us for inclusion in the *EIN Software Catalog*. Because of the delay that editing and improving imposes on us, we can't get them all in at once. We would like your help in assigning a priority to these.

Would you please mark those which interest you. If you wish to specify a priority among them or cross off those which you see as without merit, please do that also.

It was suggested at the EDUCOM Fall Council that one of the benefits of circulating this list would be the use you could make of it within you institution. If you copy and distribute it internally, you might get some feedback as to what the interest profile is among your own users. I would encourage you to do this. Please note the entry field at the end entitled "Programs or types of programs which you would like to use if we could make them available." This could produce some interesting feedback, both to you and to us.

As I suggested at the Fall Council, the bottleneck in our operation is the time involved in editing and redocumenting programs. Therefore, you can be of great help to us in the following ways:

(1) If you recognize any of these programs as your own and you have more up-to-date documentation than that in our office, please send it along to us.

(2) If you can redocument your programs in accordance with the *Documentation Standards Handbook* (enclosed), please volunteer to do so.

(3) If you have any programs which you can submit documented in accordance with these standards, or even close to them, this would help.

(4) Last, but not least, of course, we are inviting submission of any significant program. If you have some program that would be of interest to the other members of EIN, please send it in regardless (alas) of the form.

Let me remind you that publication of a program in the *EIN Software Catalog* is a form of scholarly recognition. We encourage you to tell us what journals should be notified of our acceptance of your programs, and even to write your own press release to those journals.

We have a video tape explaining EIN; you may have seen it at the conference. If you feel that it would be useful to you in introducing EIN to your staff, in stimulating interest, in clarifying EIN, etc., you are free to borrow it without cost. It is available on 1/2-, 1-, and 2-inch SONY video tape and on 16mm sound film. The running time is 23 minutes.

Please don't be insulted if your favorite program fails to make the top ten and get in the next supplement. Another list of this sort will be circulated when more programs are committed. I look forward to your response.

Very truly yours,

John C LeGates

John C. LeGates
Executive Director of EIN

JCL:jev

Enclosure

LIST OF AVAILABLE PROGRAMS

Ranking System: x = uninteresting ✓ = interesting ✓✓ = very interesting

EIN NO.	INSTITUTION	NAME	PURPOSE	RANK
0038	Fla. State	CONTEXT/ CONCORD	Textual editor and concordance; concordance of words within contexts.	
0040	Fla. State	TRAN/PLAN	Evaluation of modelled systems of planned urban transportation.	
0045	Penn. State	QSASE	Computation of ordinary least-square estimates of single equation regression models.	
0047	Penn. State	SYMAP	Synagraphic computer mapping (according to contours, point, proximity, etc.) See 0039 for details	
0050	Penn. State	FORMAC	Symbolic manipulations of mathematical expressions, including coefficient, constant, and factor recognitions, differentiation, and the PL/I functions (intepretive program)	
0050 (a)	Penn. State	FMACUT	Intepretation and execution of FORMAC statements (see above) supplied as data (not requiring knowledge of PL/I)	
0051 (a-s)	Penn. State	STPAC	Extensive package of statistical routines including measure of central tendency and dispersion, correlation, regression	
0052	Univ. of Kansas	SYSTEMS PROGRAM 1		
0053	Notre Dame	BEEFDP	Data Processing Package, enhancing FORTRAN's abilities in realm of character and field manipulation, report preparation, etc.	

LIST OF AVAILABLE PROGRAMS

Ranking System: x = uninteresting ✓ = interesting ✓✓ = very interesting

EIN NO.	INSTITUTION	NAME	PURPOSE	RANK
0054	Notre Dame	BEEFM	Extensive Mathematical Routine Package	
0055	Notre Dame	BMD	Standard Biomedical Routine Multivariate Statistical Package.	
0056	Notre Dame	LP1107	Linear Programming Package, using either the dual or simplex algorithm.	
0057	Notre Dame	PERT	Time/cost planning and control of research and development programs	
0058	Notre Dame	RUNGE	Solution of ordinary simultaneous differential equations.	
0059	Notre Dame	POWR	Power Series Package for manipulation of one- or two-variable power series.	
0061	Notre Dame	SCRIPT	Provision of expanded character sets (incl Greek letters) for Cal Comp Plotters	
0062	Notre Dame	SSP360	Package to expand FORTRAN capabilities as commercial and scientific processor, in the form of routines for function evaluation, matrix manipulation, and statistics	
0063	Educational Testing Service	MANOVA	Univariate and multivariate analysis of variance, of covariance, and of regression - with or without discriminant analyses or canonical correlations	
0064	Educational Testing Service	MINRES	Factor analysis involving the minimization of off-diagonal residuals of a correlation matrix	

LIST OF AVAILABLE PROGRAMS

Ranking System: x = uninteresting ✓ = interesting ✓✓ = very interesting

EIN NO.	INSTITUTION	NAME	PURPOSE	RANK
0065	Educational Testing Service	DIROBL	Factor analysis involving oblique factors; direct determination of primary factors exhibiting the "simple structure" principles	
0067	Educational Testing Service	RMLFA	Restricted maximum likelihood factor analysis (see EIN No. 0066-UMLFA); factor analysis of correlation matrix with specification of magnitudes of certain final statistics	
0068	Educational Testing Service	AMOLT	Algebraic manipulator of linear transforms (matrices, vectors, scalars, etc.) for statistical result determinations	
0069	Educational Testing Service	XAMN	Program library maintenance - updating and interrogation of program tapes	
0070	Univ. of Georgia	BIR	Biosciences information retrieval; including Biological abstracts and Chemical Abstracts	
0071	Northwestern Univ.	SPURT	Extensive FORTRAN package for simulation modelling problems; general system for employing simulation techniques	
0072	Univ. of Penn.	FREFOR	Facility for free form input for FORTRAN users, combining best features of WATFOR, QUIKTRAN, and SNOBOL Languages	
0074	Univ. of Penn.	MACROS	FORTRAN I/O macro facility; usable by assembly programmers desiring FORTRAN object-time I/O system capabilities	

LIST OF AVAILABLE PROGRAMS

Ranking System: x = uninteresting ✓ = interesting ✓✓ = very interesting

EIN NO.	INSTITUTION	NAME	PURPOSE	RANK
0075	Univ. of Penn.	WHARTFOR	Macro-generating and pre-processing system for the creation and implementation of a macro library in FORTRAN	
0076	Univ. of Penn.	FLWCHT	Flow charting of FORTRAN programs	
0077	Univ. of Penn.	HIST	Production of histograms of the distribution of numbers in arrays, including calculation of means, medians, standard deviations, quartile boundaries, etc.	
0078	Univ. of Penn.	ELON	Estimation of coefficients of single-equation or simultaneous-equation models	
0079	Univ. of Penn.	AUTO (and FISH)	Alternative to ELON (EIN # 0078) -- estimations of the first- and second-order autoregressive scheme of error terms	
0080	Univ. of Penn.	CSMP	Sytem modelling via functional blocks-- problem-oriented language (also accepting FORTRAN transformations)	
0087	Univ. of Pitts.	ORFLS-PX	Structure factor - least squares refinement program for statistical analysis of atomic structure	
0089	Michigan State	ACT	Bivariate frequency distributions (cross-tabulations) on variable pairs from cards or tape; tabulation of simple statistics of designated tables	
0090	Michigan State	MODEL	General solution for state models; determination of state model, terminal, and variable equations for a given linear system (in terms of state variables)	

LIST OF AVAILABLE PROGRAMS

Ranking System: x = uninteresting ✓ = interesting ✓✓ = very interesting

EIN NO.	INSTITUTION	NAME	PURPOSE	RANK
0091	Michigan State	SYNTH2	Synthesis of (n+1)- terminal resistive network (if it exists) from real, symmetric, n X n conductive matrix	
0092	Michigan State	KWIC	Keyword indexing in context	
0093	Michigan State	ONEFUL	Formation of univariate frequency distributions of a Single column field in a deck of punched cards	
0094	Michigan State	TESTS		
0095	Michigan State	MATCH	Computer-oriented selection of partners for social functions from questionnaire information	
0096	Michigan State	MIDAS	Compilation of analog block diagrams for solution on digital computers	
0097	Michigan State	DISPLAY	Display of histograms, scatter plots, and Gaussian ideograms on a printer from data stored on magnetic tape	
0098	Michigan State	TELESCOPE1	Approximation and reduction of polynomial function coefficients for a domain of positive real numbers	
0099	Michigan State	TELESCOPE2	Similar to above, except that function domain is extended into negative values	
0100	Michigan State	MINIT	Solution of general linear programming problems	

Ranking System: x = uninteresting ✓ = interesting ✓✓ = very interesting

EIN NO.	INSTITUTION	NAME	PURPOSE	RANK
0101	Michigan State		Calculation of minimum excess cost curve (minimum cost involved in the expedition of a given project's completion date), utilizing a network-type description of the project	
0102	Michigan State	FLOWTRACE	Flowcharting FORTRAN programs on the printer	
0103	Michigan State	KRUSCAL	Implementation of J.B. Kruscal's method for multi-dimensional scaling by optimizing goodness of fit to hypotheses	
0104	Michigan State	TSSA	Test scoring, raw and corrected; test statistics; item analysis	
0105	Michigan State	FASCALE	Multidimensional scaling and principal-axes factor analysis with varimax or quartimax rotations	
0106	Michigan State	CANON	Multiple canonical analysis - computation of full set of canonical correlations	
0107	Michigan State	DISCRIM2	Determination of discriminant functions, operating on a set of group variates, and maximizing the ration of between-group variability to pooled, within-group variability	
0108	Michigan State	FOURIER	Calculation of frequencies present in data, using a series of observations and Fourier methods	
0109	Michigan State	WILCOXON	Performance of Mann-Whitney U Test, Wilcoxon Matched-pairs signed ranks test, sign test, Walsh tests, Fisher student T-test, Snedecor-Fisher F-test, and randomization tests	

LIST OF AVAILABLE PROGRAMS

Ranking System: x = uninteresting ✓ = interesting ✓✓ = very interesting

EIN NO.	INSTITUTION	NAME	PURPOSE	RANK
0110	Michigan State	SCHEDULE	Preparation of course schedules and student schedules	

Please list any programs or items of systems software which you would like to list with the Network. Please remeber that "Unbundling" may make some of your software of great interest to your colleagues.

INSTITUTION	NAME	PURPOSE

Please list any program or types of programs you would like to use if we could make make them available.

INSTITUTION	NAME	PURPOSE

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EDUCOM

8 December 1969

MEMORANDUM

TO: EIN Technical Representatives

FROM: John C. LeGates

CONCERNING: Unbundling

At a meeting of the EIN Executive Committee on 2 December 1969, unbundling was the prime item on the agenda.

It is our feeling that EIN can respond to the hardships which unbundling is putting on most of us. We cannot completely solve the problem, but we can help relieve the financial, the accessibility, and the time pinches.

The EIN network will continue to function on the same structure as before. It will, however, expand its interest to include not only user programs, but systems, systems programs, and remote access facilities.

Our first goal will be to bring the listings of this type up to the critical number at which the catalog will be useful. This will be done in two steps. First, all present EIN members will list or promise to list whatever systems are convenient for them. Second, using this list as seeding, a large expansion campaign will be launched. This will be carried out in conjunction with SIGUCC, and will be announced to the membership of that group at their February conference on unbundling.

We, therefore, urge you to submit to EIN all systems which you have that meet the following criteria:

1. They are in good operating condition at your facility.
2. They would be useful to someone by virtue of the hardships imposed by unbundling.

Page two -

We realize that it will require time and effort to meet this request. It is our feeling, however, that the benefits will repay you in the long run.

Attached are temporary guidelines to be used in the documentation of systems. If you cannot meet these guidelines it is still useful to us to know what you will submit when it will be convenient.

A list of (user) programs which we have already received will be sent to you shortly for your perusal. Meanwhile, we look forward to your contribution.

JCL/ehp

JCL

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EDUCOM

17 December 1969

MEMORANDUM

TO: EIN Technical Representatives

FROM: John C. LeGates
Manager of Operations

Many questions have been raised of the form: "How can I make potential users at my institution aware of EIN"?

Enclosed are some sheets from the Bulletin of the Freas-Rooke Computer Center at Bucknell showing an approach that Ed Staiano is taking.

cc: Institutional Representatives, Executive Committee,
Tom Keenan

JCL

JCL/ehp

Encl.

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

EIN CATALOG

With this NEWSLETTER we are introducing a new and continuing section for the EIN Project. For those of you who are unfamiliar with EIN, let me explain that it is an Educational Information Network concerned with the sharing of software among member academic institutions. At the present time, Bucknell is one of approximately 50 universities that have joined the EIN Project.

The heart of this network is a software catalog (of which we have two copies in the Computer Center) that lists in various forms, programs and programming systems that have been contributed by member institutions.

The purpose of the EIN section of the NEWSLETTER will be to list those new programs that have been added to the EIN catalog during the previous month. In addition, any special information or newsworthy items on the project will also be included in this section.

Since this is the beginning month for this service, we will list all of the programs presently in the EIN catalog. We believe that EIN can be a very useful service to members of the Bucknell community. I would like to personally invite you to take advantage of this service, and should you have any questions concerning how you may do so, please do not hesitate to call me.

E. F. Staiano, Director

****

ADMINISTRATIVE SYSTEMS

Under the direction of Special Systems Programmer, Mr. Carlton Depner, we continue the transferring of 1620 programs to the Sigma-7. As mentioned in the October NEWSLETTER, this conversion is mostly a FORTRAN II with I/O SPS subroutines, to COBOL-65 and some FORTRAN IV.

Most business area programs are now on the Sigma permitting us to run parallel with the 1620 on this important systems phase.

Mr. Rick Seaman, Administrative Programmer, is completing the primary student record area programs which will also be run parallel in the next few weeks.

Basic design of our "Payroll by Exception" is complete and the 6 basic areas of programming will be assigned to our administrative programmers. Current "Early Decision" Admissions records will be generated for the first time on the 1620. The remainder of the work is scheduled to be run on the Sigma in January.

Alumni updates and the total class of 1969 are ready for inclusion in our Sigma Alumni record. We are aiming at a December 1 deadline for a new Alumni Directory and selective listings.

William D. Gold, Manager

EIN ABSTRACTS

SECTION	NUMBER	DESCRIPTIVE TITLES
Behavioral Sciences	000 0001	Mann-Whitney U Test
	000 0004	Subtle, Unbiased, Zealous Yatagen of Questionnaries
	000 0009	FORTRAN Program for Guttman and Other Scalogram Analyses
	000 0041	A Package of Three FORTRAN Programs for Computerized Assistance in the Instruction of Beginning and Remedial Reading and the Evaluation of Such Instruction.
Computer Utility	000 0023	Program Deck Identification Field Sequencing Program
	000 0032	Sequence Checking
	000 0037	Simulator of SAMOS (A Simple Imaginary Machine Language for Instruction)
	000 0084	Bucharest Sort a List into Ascending Order
	000 0085	Bucharest Sort a List into Descending Order
Earth Sciences	000 0039	Synagraphic Computer-Mapping Program
Engineering & Technology	000 0039	Synagraphic Computer-Mapping Program
	000 0043	Program for Analysis of Linear Systems
Library & Information Sciences	000 0006	"Book-Type" Indexing Program
	000 0024	Information-Oriented Language - A Generalized Information and Retrieval System
	000 0034	Information Retrieval System for Creating, Maintaining, Indexing, and Retrieving from Files of Textual Information

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EDUCOM

MEMORANDUM

TO: All EIN TR's; all EDUCOM IR's
FROM: John C. LeGates
CONCERNING: Extension of EIN
DATE: 19 December 1969

The time has come to apply for an extension of the EIN Grant. A one year's extension of approximately $100,000 will keep EIN functioning until June 1971. During this period, we believe we can extend EIN's services considerably and make it financially self-supporting.

I urge those of you who feel that this extension is worthwhile to write a letter of support to me at this office. This letter will be attached to the proposal as an appendix, indicating the level of support that exists for EIN. It can, at the same time, convey specific expressions as to the exact merit of the operation from people such as yourselves who are active in the field.

For those of you who may wish to communicate your views directly to the funding agencies, the persons in charge are

Dr. Andrew Molnar
U.S. Office of Education
Bureau of Research
400 Maryland Avenue, S.W.
Washington, D.C. 20202

Dr. Arthur Melmed
Office of Computing Act.
National Science Foundation
1800 G Street, N.W.
Washington, D.C. 20550

and of course others in the hierarchy of NSF and OE.

Contributing to the extension of the EIN Grant is perhaps the most appropriate way in which to express your belief in the value of the project.

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EDUCOM
EIN PROJECT

CAN EIN BE USEFUL TO ME?

WHAT IS EIN?

EIN is a nonprofit operation concerned with the sharing of educational computing resources. It is administered by EDUCOM. Funded jointly by USOE and NSF, EIN is a Network operating on the following premises:

(1) Software is used at the installation where it is currently running.

(2) The Network is to distribute information about the availability of this software.

(3) The Network is to act as administrative middleman between the user and the resource. It will secure the commitment of the resource to the user and will handle the billing and accounting.

(4) The Network is in no way to interpose itself into the technical transaction.

HOW DOES EIN WORK?

EIN maintains a group of contact personnel at institutions across the United States and Canada, called the EIN technical representatives. Each of these persons is the liaison between his institution and EIN.

Through these persons, items of software are offered for distribution through the Network. These include programs, systems of programs, systems, interactive systems, etc. In other words, any item of software that is of interest to the academic community can be included.

EIN publishes the programs in a periodical called the *EIN Software Catalog*. This is supplemented monthly and distributed to all institutions which are members of EIN. It makes all programs listed with EIN available for the inspection of anyone who might wish to use them.

Persons wishing to use a program make the arrangements through the EIN technical representative at their institution.

HOW DOES EIN BENEFIT ITS MEMBERS?

In General:	Computational facilities are expensive. Technical abilities are in short supply. Requirements for many different types of facility exist at the same institution.

All these problems are helped by resource sharing.

As A Resource:	The *EIN Software Catalog* provides a medium for the publication and recognition of software. It is in that respect like a scholarly journal. In addition, EIN will notify the disciplinary journals of the inclusion of specific items. Usage of your facility by the Network can provide better utilization by adding billable hours.
As A User:	EIN vastly increases the computational power at your disposal. The sum of the facilities listed in the Catalog is a far larger resource than any single institution can afford.

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EDUCOM
EIN PROJECT

MORE INFORMATION ABOUT EIN

ELIGIBILITY

Membership is open to any member of EDUCOM. Nonmembers may use the EIN network by working through an EIN member at the discretion of that member.

BENEFITS

Upon joining EIN, members will receive two copies of the EIN Software Catalog, five copies of the Documentation Standards Handbook, and detailed instructions concerning use of the Network. The Catalog will be updated monthly. Additional copies of the Catalog are available at cost ($75/year). Additional copies of the Handbook are available without cost.

Members are entitled to list programs with the Network. In doing so, they submit documentation to EIN, and guarantee to run these programs for the Network as for any other user. They are free to set their own rates and conditions. In general, input will be mailed to the member for running at his installation. EIN will handle all billing and accounting, and function as a single user.

Members are entitled to use the Network. Any programs listed in the Catalog will be run for them by the Network at the installation which listed the programs. Billing and accounting will be handled by EIN. Once the initial account has been established, EIN will not intervene in the technical transactions.

EIN will attempt to serve as a clearinghouse for information concerning software. If members wish to know of the existence and whereabouts of an item, they may call the Boston office. Although this is not EIN's principal function, it sometimes can be useful.

OBLIGATIONS

Members must pay annual dues of $250 for membership in EDUCOM.

Members must appoint an EIN Technical Representative. He will be the liaison officer between the member and the Network. In many cases, the director of the institution's computing center assumes this role. He may or may not be the same individual as the Institutional Representative to EDUCOM, at the discretion of the member.

The Technical Representative will be asked to attend conferences twice a year at his own expense.

The institution will assume all expenses connected with preparation of input and output samples for programs it wishes to list. It will be expected to submit its documentation in reasonable form for inclusion in the Catalog.

HOW TO JOIN EIN

Institutions wishing to join EIN must first join EDUCOM. For details see the EDUCOM Brochure.

After acceptance into EDUCOM, the institution must declare its intention to join EIN and appoint a Technical Representative. The institution will then automatically become a member of EIN.

EIN Data

EDUCOM has appointed Mr. John C. LeGates Manager of Operations of the Educational Information Network (EIN). Mr. LeGates comes to EDUCOM after an affiliation as Vice President with the Cambridge Medical Information Systems, Inc.

As it enters the 1970s, EIN shows considerable progress and growth; several specific accomplishments and decisions have been made which will affect the long-term development of the network:

Production of Programs: Supplements to the EIN Software Catalog were mailed in October, November, and December with eight programs each, bringing the total number of programs to 49. In these supplements, five new resources, who are supplying programs to EIN, were included, bringing the total number to seven. The new institutions: Educational Testing Service, Iowa State University of Science and Technology, Pennsylvania State University, University of Pittsburgh, and the City College of the City University of New York.

Additional Staff: Three persons have joined EIN part time to help Robert Schmidt with the production of programs: Wayne Zafft, John Herndon, and Nanette Feurzeig.

EIN Membership: Ten new institutions joined EIN during the period immediately following the October Council; the total number of Technical Representatives is now 61. Inquiries have come in from many sources, including several from consortia and two from European institutions. Early this year, it is planned to expand a scope of membership in EIN by considering for admission organizations which are associated with EDUCOM member institutions in some way. For example, consortia having members who are also in EDUCOM will become eligible. In addition, the broadened base of eligibility for EDUCOM itself will make it possible for many more educational institutions to take advantage of the facilities offered by EIN.

Even non-member institutions, however, will be permitted to use the network by working through a member, at the discretion of that member.

New Way to Establish Credit: Many members have expressed a desire to avoid the various ways of establishing credit that are currently acceptable to the network; therefore, a new way will be provided: an additional phrase will be added to the Account Initiation Form, guaranteeing payment for jobs. Members will thereby be released from the burden of guaranteeing payment by making a deposit.

Classes of Programs: The EIN service has been limited so far to that class of software commonly called "user programs." It will now be extended to include the additional categories of systems software and remote access systems. The first has already been announced in a memo entitled "Unbundling." The second will appear, along with certain special procedures, in the next catalog update. "Unbundling" is a new term used to denote the separation of hardware and software packages, a step recently announced by major computer manufacturers.

John C. LeGates, EIN Manager of Operations

New Approach to Unbundling: EIN feels itself to be in a position where it can help with the problems related to unbundling. It is our belief that there will be a search precipitated for cheaper ways to obtain or access software. With its precommitted set of resources, and prefunctioning software-sharing network, EIN is already offering a partial solution. EIN is responding to unbundling with the following program: to include systems software among the listings was one-half of the response; the other half will be a membership drive, carried out with the close cooperation of the Special Interest Group in University Computing Centers (SIGUCC) of the ACM. A presentation of our service will be made at the February unbundling conference of that group. Other ways in which EIN and SIGUCC can complement one another will be explored.

EIN Data will be a continuing feature in EDUCOM in order to keep both members and nonmembers up to date on the growth of the network. Inquiries are welcome, and topics of broad interest will be discussed in the column.

EIN Data

One of the most important events in the progress of the Educational Information Network, according to Executive Director John C. LeGates, is the recent phenomenon called *unbundling*. As defined in the last issue, unbundling is the term used to denote the separation of hardware and software packages, a step recently announced by major computer manufacturers. This action permeates the entire computer world and has a marked effect on the EIN program. An immediate result for hardware owners will be a rise in the cost of software. This, coupled with the normally rapid obsolesense of software, creates the problem of a potential shortage. One solution lies in the concept of software sharing, which is what EIN is all about. EIN can be considered a sort of collective buyer in the sense that once a software package has been listed, it is available to all of the members. In some cases the program will be run at the member institution that listed it; in others, the program will be available for duplication and distribution among users of the network.

SIGUCC Presentation: EIN made a major presentation on its operation and plans for handling the unbundling problem to academic computer center directors attending the 17 February "Conference on Unbundling." The meeting was held in Atlanta by the Special Interest Group on University Computing Centers (SIGUCC) of the Association for Computing Machinery. Executive Director LeGates, Chairman of the Executive Committee Demos Eitzer and Committee Member Lorraine Borman addressed the group during the presentation. Thomas Keenan, the first Executive Director of EIN, now with the National Science Foundation, was the official recorder for the material to be published in the conference proceedings.

Basically, the EIN "solution" is to continue with an expanding software catalog and to add to it a section that will list newly "unbundled programs" held by EIN members. Unbundled programs are those which formerly were offered by manufacturers along with their hardware but which have now been separated and can be obtained separately. Reaction to the proposal was favorable from both the university participants and the manufacturers' representatives present.

Membership Growth: EIN membership has now grown from the 61 reported in the last column to 75. Inquires concerning membership continue to arrive from both U.S. and foreign institutions.

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EDUCOM

March 4, 1970

MEMORANDUM

TO: All EIN TR's

FROM: John C. LeGates
Executive Director of EIN

CONCERNING: EDUCOM Spring Council

I would like to call your attention to the EDUCOM Spring Council. This will be held on Wednesday and Thursday, 15 and 16 April, in Boston. On Wednesday, 15 April, there will be an EIN open Workshop.

On this occasion, the Executive Committee and I will make formal presentations concerning the operation and status of the Network. We hope to discuss possible projects for the future, and determine from you which would be helpful to the membership.

It is through meetings such as these that you have an opportunity to communicate with each other, and share insights and resources at a time when the latter are in short supply. More important, however, is the fact that these meetings provide the opportunity for you to exercise your position as the policy-makers for the Network. Remember that EIN is your operation, and exists to provide those services which you want. These meetings are the vehicle through which you shape and structure these services.

A Council Schedule and registration form will appear in the next issue of the EDUCOM Bulletin. I urge you to attend if possible.

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

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EDUCOM

March 4, 1970

MEMORANDUM

TO: EIN TR's

FROM: John C. LeGates
Executive Director of EIN

CONCERNING: Unbundling

EIN recently attended the SIGUCC - ACM "Unbundling" Conference in Atlanta. Among the items which emerged during the conference were the following:

Unbundling is putting an unfair economic burden on the university computation centers. This burden is increased by the cutbacks in federal help.

It will be very difficult for most computation centers to maintain their present level of service.

Sharing of resources will be incresingly important in helping with these problems.

Current resource sharing mechanisms, (such as EIN) should be supported and used by their members so as to maximize their usefulness.

Accordingly, the Executive Committee has decided to include a new section in the Catalog. This will list all unbundled items of software which are in the possession of EIN members. Listing in this section will in no way constitute a promise to run the program, or a guarantee of its condition. The same program(s) can also be listed in the regular sections of the Catalog.

This section will be nothing but a list of programs, giving the manufacturer, the title, a line of description if necessary for identification, and the name of the institution which has the program. Therefore, we request that you submit such a list for inclusion.

It is also apparent that EIN can be helpful with the problems of unbundling in a more general way. It provides a preexisting medium whereby a member can access software without having to buy, lease, or develop it. The utility of the Network in this way is more or less proportional to the number of entries in the Catalog. In order to bring the Catalog to a size at which it is a powerful aid to unbundling, we urge you to submit a number of programs in a predocumented form. The procedures for publishing them in the Catalog are functioning well. The impact on the usefulness of EIN that will occur if each of its 75 members offers ten new programs should be apparent.

Finally, we would like to list a brief description of each member's facility, whether or not he is offering programs to the Network. The utility to each member of knowing what the other members have should be clear. Therefore, we ask you to submit a brief description in the form displayed in the "Facilities" section of the Catalog. The information fields are:

Name of Facility
Name and Address of EIN Technical Representative
Principal Equipment
Standard System Use
Pricing

IN SUMMARY

We feel that EIN can be a powerful tool to help with the problems of unbundling. It's effectiveness will depend on the co-operation of the members, with each other via the network.

Therefore, we ask that each member submit the following for inclusion in the Catalog:

A list of the names of all unbundled items of software in their possession;

A brief description of their facility;

Some programs for inclusion in the Catalog, hopefully documented in accordance with the handbook.

We realize that these requests will involve effort on the part of the members. We expect that the benefits of a more powerful EIN will far outweigh the effort. We will do our best to help you with unbundling and federal cutbacks. Please help us to do so.

EIN Data

CONTINUED GROWTH

Among the more significant facts brought to light during the EIN Workshop were the growing number of EIN members–there are presently 76 and the rate of programs added each month now averaging 20.

SYSTEMS DOCUMENTATIONS MADE EASIER

In response to a request that participating EIN members should contribute more a) facility descriptions b) programs c) lists of unbundled programs that they already have, the representatives in the session noted that it was difficult to document extensive systems. Such documentation, however, does not need to tax the capabilities of the submitting institution, nor the capabilities of the catalog - rather, extensive systems can be documented very scantily with heavy use of references. In addition, it was suggested that potential users of such systems might be provided with the source manual to supplement the catalog. EIN will volunteer to distribute these, where inconvenient for the resource.

CATALOGED PROGRAMS SUBMITTED IN FEBRUARY AND MARCH:

PROGRAM	DESCRIPTION	EIN NO.
Pennsylvania State University		
SYMAP	Produces three types of maps; contour, conformant, and proximal.	0047
STPAC	Collection of statistical routines, *includes the following:*	0051
FAWCS	Computes contingency tables and expected frequencies and/or percentages.	0051 (a)
STSUM	Computes the sample size, total, mean, standard deviation, population-variation estimate, standard error, sum of squares, coefficient of variation, third and fourth moments about the origin, third and fourth central moments, alpha, alpha 4, momental skewness and kurtosis.	0051 (b)
TTEST	Performs a T test on difference between means of correlated or uncorrelated samples.	0051 (c)
PPMCR	Computes a Pearson product-moment correlation for variable parts and the mean and standard deviations of variables.	0051 (d)
SIGPP	Tests the significance of Pearson product-moment correlation coefficient.	0051 (e)
PARCOR	Constructs the variance-covariance matrix for variables and computes the partial and multiple correlations for any subset.	0051 (f)
CANON	Solves for the most significant canonical correlation coefficients.	0051 (g)
UPREG/DNREG	Computes stepwise multiple-regression equations.	0051 (h)
FANAL	Solves for most dominant factors of a correlation matrix by variance explained.	0051 (i)
VARMX	Performs orthogonal rotations on matrix of factor loadings to produce a unique matrix.	0051 (j)
PHICO	Computes phi coefficients for variable pairs.	0051 (k)
KETAU	Computes Kendall rank–correlation coefficients, and values, probabilities and significance levels of z scores associated with them.	0051 (l)
SPRHO	Computes Spearman rank-order correlation coefficients and corresponding values of t for variable pairs.	0051 (m)
ANOVUM	Performs a factor analysis of variance of unweighted means.	0051 (p)
Northwestern University		
SPURT	Package for simulation modelling; includes routines to sequence events, generate samples from probability distributions, calculate statistical parameters, model analog problems, process lists and queues, and handle printing and graphical output.	0071

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EDUCOM

15 May 1970

MEMORANDUM

TO: EIN TR's

FROM: John C. LeGates

CONCERNING: Convenience of Submission to the EIN Catalog

Two steps have been taken which make it more convenient for you to submit programs to the EIN Catalog. These are:

1. Long programs or systems of programs can be listed as short descriptive entries with good lists of references. One page will usually suffice. Samples of input/output are optional and user instructions are omitted. This change should make your most elaborate programs the easiest to submit. We hope that this will allow you to give us some programs previously withheld.
2. Camera-ready copies of your entries will be submitted to you for approval and correction prior to listing in the Catalog.

In addition, the following suggestions will make life easier for you in preparing programs for submission.

1. Please make sure that your reference items are completely stated. If dates, publishers, etc. are left out, we are required to pester you or your author to get them.
2. Where applicable, please include sample input/output and cost estimates. Otherwise, these have to be provided later.
3. In submitting photocopyable material, remember the following guidelines:
   a. Blue ink or pencil does not show on photocopies. Therefore, do not use blue ink for important data. Please do use blue pencil for marginal notes. Use blue line paper rather than black line paper wherever possible.
   b. Only excellent xerox copies are useful for photocopying. Therefore, please send highest quality xerox or original copies.

Please remember, however, that if you cannot comply with these suggestions or cannot redocument your programs to our standards, we can accept them anyway. There will be an additional time delay while we rework them but we are glad to have any programs of value.

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

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EDUCOM

22 May 1970

MEMORANDUM

TO: The Record

FROM: John C. LeGates

CONCERNING: Conversation between John C. LeGates, Educom and Lawrence G. Roberts, ARPA---May 22, 1970

The purpose of the conversation was to discuss possible ways in which the ARPA Network and EDUCOM might interact to the benefit of one or both members.

The following properties of the ARPA Network seem to make an interaction practical.

1. The network consists of a communications net and computational capabilities which function with a high degree of independence.
2. For all practical purposes, the network cannot be overloaded.
3. The more nodes that can be added to the communications network the better it will function.
4. The cost of operating the communications net is a function of the number of nodes--the more nodes the cheaper.
5. The network is continuously expansible. That is to say it can be expanded by increments of any size.
6. The network can accept as new nodes either multiaccess systems (input-output devices) or nodes with a host computer (new computational capabilities).

Some sample costs are as follows:

1. The initial cost of cross-country connectivity--for a new network--would be $500,000 to $1,000,000.
2. The addition of one new node to the present system would cost approximately $80,000 for the purchase of an interface message processor plus $70,000 one time interface cost plus $50,000 a year on-going communication cost. Computation use would probably also be charged. Network membership could be cost effective for certain institutions even at this price.

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

3. If 50 nodes were to be added, the cost of each incremental node could be as low as $20,000 one-time cost plus $20,000 a year on-going. Under these conditions, more power would be purchased than with a single incremental node.

4. A multiaccess system with no computational capabilities might cost around $100,000.

Therefore it seems more desirable for EDUCOM to add its members as nodes to the current network than for EDUCOM to establish a second and parallel network. These nodes in turn (as well as the present nodes) might be available to other EDUCOM members via the present EIN Network or some kind of direct connection.

A current difficulty lies in the fact that computational capabilities are made available free on the ARPA Network. Internal billing is estimated to be not less than 1 year away, although certain nodes (UCLA, Santa Barbara) might be able to do it sooner.

Dr. Roberts estimates a minimum time lag between a decision and an implementation of nine months and a minimum time for production of a good decision as 6 months.

Two potential sources of funding were discussed. The first is the National Science Foundation which is already funding a great deal of university computer center activity. They might consider a proposal which demonstrated that the services they are already funding could be provided more cheaply via a network.

The second is to regard the network as an economic service. It would supply capabilities already being purchased by universities for the money they are already budgeting. As the number of nodes grows the network would become increasingly competitive.

ARPA has requested two items of information from EDUCOM should we decide to proceed with this investigation.

1. A list of the EDUCOM members who might potentially become nodes. This list should include a very rough estimate of the usage at that institution. A rough statement of the computation budget would do. It should also include the latitude and longitude of the institution.

2. A memorandum on the types of financial transaction and billing procedure that would be satisfactory for communication among EDUCOM nodes.

In summary, interest was expressed on both sides and it seems to me that this is a fruitful operation for EDUCOM to consider.

JCL

23 June 1970

MEMORANDUM

TO: All EIN Technical Representatives and
EDUCOM Institutional Representatives

FROM: John C. LeGates

CONCERNING: New EIN Services

You will notice that a new section has appeared in the Catalog as of Supplement 10. This section lists entire computing facilities. These facilities can be accessed through EIN by any means that are available. In many cases this includes remote teletype, tape and cards. In general, the entire use of the facility is available including access to the library, the executive control language and data files, where applicable.

Accordingly, there is much more computational capability offered in these few pages than in the rest of the Catalog. We encourage you to look them over and consider what use you can make of them. More detailed documentation on each system is available from the source listed in the appropriate section.

We urge you to consider whether or not you could benefit yourself and/or the community by offering your own facility in this section.

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EDUCOM

EIN is now an operational entity and no longer only a bright idea. As you are one of the people who have expressed an interest in and made a commitment to EIN, we would like to report to you on our progress. We urge you to become involved with the problems which the operational phase has brought to the fore.

EIN has been highly successful in attracting members and achieving publicity. Its documentation standards have been adopted for internal use by several institutions. The quality of the Catalog has been widely praised.

EIN has been moderately successful in attracting resources for distribution through the Network. While the Catalog is of networking size, it would be much more useful with more listings.

There have been very few transactions through the Network. There have been, however, a very large number of transactions outside of the Network. These have consisted of requests for programs to be transported to the site of the user. Such transactions, although performing a valuable function, produce no revenue for its services.

We would like to request two things of you.

The first is your help in increasing the capabilities offered through the Network. You can do this as you have been by submitting programs. Recent experience, however, has shown that more use will be made of programs that can be accessed by electronic connection. If your facility can be reached by teletype or other remote device, we urge you to submit programs accessible via this medium. Several members have chosen to list their entire facility either interactively or otherwise. This, of course, is the most useful of all. Let me also point out that the listing of systems is much easier than the listing of programs. Special documentation standards are enclosed. Please note that the listing of your entire facility should require no more than two pages.

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

Our second request is that you bring EIN to the front of your attention and consider what use you can make of the offerings already available. Please look into the Catalog. If there are programs which you would like to use, please use them. If there are obstacles, please consider how we can help you. For example, if you need education as to the workings of a program, we will attempt to arrange a visit to your campus. If there are programs which you would like to use but do not find in the Catalog, please let us know what they are and we will attempt to have them listed. If your own program is listed but is not being used, please let us know of any potential users and we will attempt to help them.

Finally, please consider us eager to help with the dissemination of information about EIN. If you would like a representative to visit your institution and speak about the network, we will be glad to arrange it. Groups could be either computer- or network-oriented or members of a discipline who could benefit by program sharing.

EIN is constantly in the process of reviewing its own usefulness and performance. Any information which you can pass on to us concerning how EIN has served you or not served you, and why, will be very helpful.

Now that we are operational, the capabilities which you submit and the usage which you make of the network speak much louder than statements of interest. We will be considering the former more heavily than the latter in determining such things as the type of network we run and even the need for the network to continue. EIN depended for its creation on your statements of interest and commitment. It will now depend for its continuation on the use of which you make of it.

Very truly yours,

John C. LeGates
Executive Director of EIN

JCL:lw

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EDUCOM

6 July 1970

MEMORANDUM

TO: EIN Executive Committee

FROM: John C. LeGates

CONCERNING: Progress

This is to let you know what's been happening down here since the last Executive Committee Meeting.

1. Funding

   A letter arrived from USOE on June 26 announcing an extention of the EIN Grant for one additional year. The amount of the grant is $70,000 out of a requested $109,000. The difference is to be made up by EDUCOM which they have promised to do. Memos and press releases to this effect will be sent out forthwith.

2. The EDUCOM Board of Trustees have requested that we look into two questions. These are:

   a. How EIN will fund itself after June 1971, and

   b. How we can get EIN better known within the member universities.

   Since the EDUCOM Board of Trustees is meeting at the fall council as are we, I assume that we can report to them at that time.

3. On-Line Connectivity

   Five institutions have agreed to let us access their computers remotely. These are Pennsylvania State University, the University of Maryland, Dartmouth College, Educational Testing Service, and Marquette University. The last institution which has a 7040 will make its machine available free but cannot be used remotely at this time.

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

4. EDUCOM has been thinking about a number of long range plans which are related to EIN in one way or another. It is too early to know how likely these are to come to fruition. They are:
   a. assimilation of the program distribution functions of COSMIC and SHARE. These two operations may be up for grabs in the next few months and it has been suggested that EDUCOM would be an appropriate home for them. We are currently negotiating with Mr. Rowell, NASA, and SHARE on those points.
   b. joint operation with the ARPA Network. This Network offers cheap cross-country connectivity on a 50 kilobit per second bandwidth and is moving from a research stage into implementation. Preliminary discussions indicate that this will be a suitable medium for EIN computers to communicate with one another. A committee consisting of Henry Chauncey, Demos Eitzer, Allen Kent, J.C.R. Licklider and myself are carrying on this investigation.
5. I will be taking a vacation in the first two weeks of August in Europe. After that I will spend approximately a week visiting our European members and other relevant institutions and a week at the IFIP World Conference on Computer Education in Amsterdam. Therefore, I will be generally unavailable in August.

It has been the judgment of Demos and myself that we do not need to meet until the Fall Council. If anyone feels otherwise or has an item of special interest, etc., please communicate that to one of us.

JCL:lw

JCL

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EDUCOM

8 July 1970

MEMORANDUM

TO: All EIN Technical Representatives and
EDUCOM Institutional Representatives

FROM: John C. LeGates

CONCERNING: Refunding of EIN

We received a telegram on June 26, 1970 informing us of an extension of the EIN Grant. This extension is supported jointly and equally by the U.S. Office of Education (Bureau of Research) and the National Science Foundation (Office of Computing Activity). It carries a stipend of $70,000 which is intended to cover two-thirds of the cost of operation of EIN from June 30, 1970 through June 30, 1971. The remaining one-third will be supplied by EDUCOM.

We would like to thank those of you who wrote letters, telephoned your congressman and otherwise stuck with us. Funds are short, and this is an achievement of which you can be proud.

We would like to remind you that this money is being spent by the government on our behalf. However, the benefit that you derive from it will be in proportion to the amount that you participate in the EIN program. We would like to encourage you to view EIN's new stability as an ocassion for submitting programs and utilizing the Catalog.

JCL

JCL:lw

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

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EDUCOM

29 July 1970

MEMORANDUM

TO: EIN Technical Representatives

FROM: John C. LeGates

CONCERNING: Spreading Information About EIN Within the Member Universities

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At our last meeting, during the EDUCOM Spring Council, various representatives suggested ideas to make more people aware of EIN within their own universities. The following is a list of those suggestions which we have been able to put into effect. All are now available to you.

1. A list of the programs in each new supplement will be included in the Bulletin immediately following it.

2. The same list will be mailed to you in the form of a press release. You can use this in your computer center bulletin, campus newspaper, or anywhere else that seems appropriate.

3. Separate facility and abstract sections of the EIN Software Catalog can be acquired for distribution within your university. These are available from the EIN Office at a cost of $10 per copy. They will be updated concurrently with the regular catalog.

   Extra copies and updates will be sent directly to the Technical Representative. EIN will not attempt to maintain lists of the individuals who possess these copies.

4. Free space will be made available to you in the EDUCOM Bulletin if you have a listing in the EIN Software Catalog. You may write an article, explanation or advertisement for your programs and we will include it. If you wish to make entries of this type, please contact the EIN Office.

JCL:lw

THE INTERUNIVERSITY COMMUNICATIONS COUNCIL

100 CHARLES RIVER PLAZA • BOSTON • MASSACHUSETTS 02114 • (617) 227-1805

29 July 1970

EDUCOM

PRESS RELEASE

(For use in the computer center bulletin, campus newspaper, or other vehicles of dissemination that are convenient.)

"New Programs Available Through EIN"

The Educational Information Network (EIN) is a project of EDUCOM. Its purpose is to share computer resources among its member institutions. The newest supplement to the EIN Software Catalog adds the following programs to the capabilities already offered:

Program	Description	EIN NUMBER
TRAN/PLAN	Package to evaluate regional transportation requirements, proposed systems and future demands.	000 0040
FORMAC	System for carrying out formal manipulations on mathematical expressions, allowing use of numeric and analytic techniques by treating expressions as symbolic entities. Interfaces with PL/1 allowing use of many PL/1 features.	000 0050
FMACUT	FORMAC utility program that serves to divorce FORMAC from PL/1, saving preprocessing time and allowing use of FORMAC by programmers lacking knowledge of PL/1.	000 0050 (a)
MNWHT	Computes results for Mann-Whitney U test, giving corresponding z scores, probabilities of z scores and levels of significance.	000 0051 (n)
KRWAL	Computes a Kruskal-Wallis one-way analysis of variance.	000 0051 (o)
ANOVES	Factorial analysis of variance for data with unequal number of cell observations. Provision is made for calculation of a reproduction factor if the chi square of disproportionality is significant.	000 0051 (q)
AOVRM	Factorial analysis of variance for repeated measures of either equal or unequal numbers of observations in cells.	000 0051 (r)
BARTL	Performs a Bartlett's test for homogeneity of variance on equal or unequal subgroups.	000 0051 (s)
ORFLS-PX	Program to compute and refine atomic structure scale factors, temperature factor coefficients, scattering factors, atomic coordinates, and other parameters from scattering data and observed scale factors.	000 0064

Persons interested in using these programs should contact their EIN representative. (Insert name ff you wish.)

EIN DATA

New Programs

The following new programs are available as of supplement eight:

Program	Description	EIN Number
TRAN/PLAN	Package to evaluate regional transportation requirements, proposed systems and future demands.	000 0040
FORMAC	System for carrying out formal manipulations on mathematical expressions, allowing use of numeric and analytic techniques by treating expressions as symbolic entities. Interfaces with PL/1.	000 0050
FMACUT	FORMAC utility program that serves to divorce FORMAC from PL/1, saving preprocessing time and allowing use of FORMAC by programmers lacking knowledge of PL/1.	000 0050 (a)
MNWHT	Computes results for Mann-Whitney U test, giving corresponding z scores, probabilities of z scores and levels of significance.	000 0051 (n)
KRWAL	Computes a Kruskal-Wallis one-way analysis of variance.	000 0051 (o)
ANOVES	Factorial analysis of variance for data within unequal number of cell observations. Provision is made for calculation of a reduction factor if the chi square of disproportionality is significant.	000 0051 (q)
AOVRM	Factorial analysis of variance for repeated measures and either equal or unequal numbers of observations in cells.	000 0051 (r)
BARTL	Performs a Bartlett's test for homogeneity of variance on equal or unequal subgroups.	000 0051 (s)
ORFLS-PX	Program to compute and refine atomic structure scale factors, temperature factor coefficients, scattering factors, atomic coordinates, and other parameters from scattering data and observed scale factors.	000 0064

John Le Gates

FINAL REPORT

Bureau of Research No.: 8-0697
Grant No.: OEG-0-8-080697-4468 (007)

EDUCATIONAL INFORMATION NETWORK (EIN)

Part I of Two Parts

Thomas A. Keenan
John C. LeGates

Interuniversity Communications Council (EDUCOM)
P. O. Box 364
Princeton, New Jersey 08540

November 1970

U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

AVAILABLE FROM: EDUCOM, P. O. Box 364, Princeton, N.J.
USOE, Bureau of Research, Washington, D.C.

EDUCOM

4 November 1970

MEMORANDUM

TO: EIN Executive Committee

FROM: John C. LeGates

CONCERNING: Some Thoughts on the Present and Future of EIN

The following is a list of possible reasons for the lack of traffic through the Network, and some arguments to support or falsify these reasons. It seems to me that what we do next depends very heavily on our analysis of this lack of traffic.

1. There exists a psychological barrier against going off campus to use a program.

    This is one of several possible solutions suggested by the fact that we have had many matches of users and programs. All of these matches have backed down rather than use the program off campus. If the problem is only psychological, it would suggest that time will heal the difficulty.

2. Turnaround time is slow.

    This seems to be very likely, particularly in conjunction with the next item. There are various solutions for this which are discussed below.

3. It is impossible to fiddle with programs since they are not immediately available. Fiddling includes direct consultation with people who know how to run it.

    This also seems to be a very likely possibility. Many programs or data require a few minor changes which can be pointed out on the spot by the operator or programmer, but which are difficult otherwise.

4. People are reluctant to trust the United States mail.

    This also seems very likely particularly when you consider that cards can be damaged without necessarily being lost and that many users have only one copy of their deck.

5. The network is not well enough known to reach its potential users.

Although more exposure would obviously be better, EIN has been rather heavily exposed at Bucknell, Florida State University, Cleveland State University, Northwestern University, and an assortment of other places. These exposures have not resulted in any usage. It seems, therefore, that the maximum amount we could give it would not result in much.

6. Use of the network is too expensive.

This has never been given as a reason.

7. The Catalog is too small.

It has been felt all along that the Catalog must reach a certain minimum size. However, it has never been clear what this size is. Most people now report that they do find interesting programs in it which should indicate that we are approaching an adequate size. It should be remembered, however, that Virginia Polytech was extremely insistant that the small size of the Catalog was critical to its lack of use.

8. It is difficult for an institution to spend money off campus.

For some institutions this is no problem at all. For others, however, it is an extremely severe one. State supported schools in Virginia, for example, cannot spend money out of state without permission of a governmental panel which requires up to two months to secure. The overall effect of this reason may be that some schools will never be users.

9. The network is too young to have caught on.

It was originally supposed that a certain time lapse would be necessary before EIN would be accepted. It does not seem, however, that this is an obstacle since EIN has become widely known and widely publicized.

There are a number of possible courses of action which suggest themselves. Here are some that should be carried out regardless of how the evaluation and subsequent decisions turn out.

1. Continue to solicit programs that are known to be especially popular.

2. Continue to solicit programs that are remotely accessible. Find out from installations who offer such a service which programs have been most useful through it and get these entered.

3. Continue to solicit entire facilities for entry into the catalog.

4. Begin a program of data gathering and research on the subject of the network itself. This means such things as

   a) determine the nature of the "illegitimate" traffic and its extent

   b) follow up some of the exposed personnel. Find out why they have not used the network.

5. Increase the marketing effort. For example,

   a) approach meetings and journals within disciplinary groups

   b) write articles about EIN for an increasing scope of publications.

6. Prepare the network for a period of hibernation to begin in June of 1971 if necessary.

In addition, three other alternatives merit consideration.

1. Minor alterations of EIN in response to the evidence now available could be made. The purpose would be to continue the philosophy of EIN as it exists but to operate more effectively. An example might be an attempt to increase the flow of abstracts into the Catalog at the expense of program writeups.

2. Attempt to solve 1 through 4 above by becoming an on-line network. An increase in the number of interactive programs and facilities is a step in the right direction. The only major effort, however, would seem to be collaboration of some kind with the ARPA concept. EDUCOM is pursuing this avenue. It may be that EIN could be combined with some ARPA functions as a package.

3. Involve EIN with program sharing of the conventional type where the program migrates to the user.

As Harry Rowell so clearly outlined, this approach is frought with hazards. In addition, it is frought with competition. The spectrum of possible activities runs from the extreme of a catalog which merely lists who has what and where to an operation like COSMIC which collects, debugs, and guarantees the performance of the programs. In the former case, income is derived from subscription to the catalog. In the latter case, income is derived from membership and program fees. Various operations "between" are also possible. It may be that EIN augmented by a move in this general direction would also be an attractive package for funding.

It is not necessary that the approaches and activities outlined above are mutually exclusive.

JCL

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European Affiliates

Two of EIN's new members are beginning an experiment with the network. The members are Bar-Ilan University in Israel, and the Universite de Liege in Belgium. The experiment is to explore the effectiveness of EIN outside North America.

These members must contend with long turnaround time and documentation that is not in their native language. However, the catalog is also useful to them as a journal of what has been done and is available. It may be true that European members can function as a subnet, communicating primarily with each other.

It is hoped that a year will provide a pretty clear picture of the usefulness of EIN in Europe.

New Members

In addition to the European members, the University of West Virginia has joined the network and plans to submit programs shortly. The appropriate name and address is:

Dr. Wayne Muth, Director
Computer Center
West Virginia University
Morgantown, West Virginia 26506

Late Supplement

Apologies are due for the delay in Supplement 9. It was sent to our printer on schedule. The printer

continued

was then beset by a remarkable sequence of ills, including stock shortage, loss of key personnel, damage from humidity, and defective subcontractors. The supplement returned to us for mailing three months late.

Institutional Visits

The EIN Executive Committee would like to make its involvement with the members more direct. If any member of EIN would like to arrange for a presentation of the network on his campus, a member will be glad to address it. Please contact the Boston Office for further information.

Fall Council

The EDUCOM Fall Council was devoted to the subject of networks. The presentations were organized by EIN, and, as the report in this issue of the *Bulletin* indicates, a number of exciting ideas that relate to EIN and its future were brought out.

New Programs

The following new programs are available as of Supplement 9.

Program Name	**Description**	**EIN Number**
SCRIPT	Provides useful and flexible character sets for the CalComp plotter.	000 0015
QSASE	Computes ordinary least-squares estimates of single equation regression models and limited-information maximum likelihood estimates for systems of simultaneous regression equations with various input and output options.	000 0045
KGIC	Facilitates the analysis of the environmental distribution of graphic characters with provisions for foreign languages or phonemic transcriptions.	000 0049
BEEFM	Library of subroutines for the evaluation of mathematical functions, matrix arithmetic, and other engineering requirements.	000 0054
INQUIRER I/II	Performs content analysis on textual data, identifying and analyzing instances of specified categories.	000 0058
BIRS	Set of program modules allowing the construction and maintenance of information systems developed for individual requirements.	000 0059
OBLIMIN	Factor analysis by oblique factor transformation to simple structure.	000 0065
MINRES	Factor analysis by the minimization of the off-diagonal residuals of a correlation matrix.	000 0087
ACT	Forms bivariate frequency distributions from designated pairs of variables on cards or tape, (also called cross-tabulations or contingency tables). Various statistical tests may be performed on specified tables, including contribution to chi square, contingency coefficient, gamma, tau, etc.	000 0089

January 1971

TO: Attendees of the Computer in Undergraduate Science Education: Physics and Mathematics, IIT, Chicago, Illinois, August 17-21, 1970.

The purpose of this questionnaire is to help determine the kind of network services that can be most useful to you. We ask you to take a moment to complete it. Your help in this matter may result in better allocation of computer resources.

A. Did you attend the presentation of the Educational Information Network (EIN) which was held in Room 302, Hermann Hall, on August 17 at 8:00 PM.

Yes_____ No_____

B. If you did not attend the presentation, please indicate why you did not.

1. The presentation was not within my field of interest.

   Yes_____ No_____

2. Presentation was within my field of interest but of a lower priority than some concurrent activity.

   Yes_____ No_____

3. Other (please specify)

C. If you did attend the workshop, did you find the presentation

1. Adequate

   Yes_____ No_____

2. Clear

   Yes_____ No_____

3. Meaningful to your interests

   Yes_____ No_____

4. Other

D. Have you subsequently used the Network.

Yes_____ No_____

E. If you have subsequently used the Network, was the service satisfactory.

Yes_____ No_____

F. If the service was not satisfactory, please indicate why it was not.

1. Mishandling of your material.

   Yes_____ No_____

2. Inadequate documentation.

   Yes_____ No_____

3. Inadequate turnaround time.

   Yes_____ No_____

4. Inadequate service.

   Yes_____ No_____

5. Other

G. If you have not used the network, why not.

1. I have not looked into the Network since the presentation.

   Yes_____ No_____

2. I have looked into the Network but failed to find a suitable service in it.

   Yes_____ No_____

3. There is a suitable resource. I have not used it because of

   a. Inability to have the program at my own institution.

      Yes_____ No_____

   b. Inability to interact with the operating staff.

      Yes_____ No_____

c. Distrust of the U.S. Mail.
Yes_____ No_____

d. Anticipation of excessive turnaround time.
Yes_____ No_____

e. Inadequate documentation.
Yes_____ No_____

f. Inability to spend money with the Network.
Yes_____ No_____

g. Other

We thank you for your help. Please return this questionnaire in the enclosed, self-addressed envelope.

Program Name	Description	EIN Number
	data in a least squares sense.	
STEPREGN	Computes a sequence of multiple linear regression equations in a stepwise manner using error sum of squares criteria for the non-forces variables.	000 0015
NUCROS	Prepares multivariate cross-classifications, including row and column sums and percentages, chi square and other coefficients.	000 0116
NORMSURV	Allows the user to test normality on a data set, producing means, standard deviations, and a list of extreme values.	000 0117
POLYCOMP (remote access)	Cross-cultural comparison using data from Murdock's *Ethnographic Atlas.*	000 0118
ETH-CODE (remote access)	Program listing the 48 major characteristics from the *Ethnographic Atlas,* with optional individual codings and subdivisions.	000 0119
ETH-DGRE (remote access)	Compares randomly selected cultures, insuring geographic separation.	000 0120
ETH-RAND (remote access)	Alternative to ETH-DGRE. Randomly selects a point, then finds a sample culture while insuring geographic separation.	000 0121
ETH-INFO (remote access)	Provides information on any of 861 cultures, giving location, size, and regional identification.	000 0122
ETHATLAS (remote access)	Scans data on 92 characteristics from 1,168 societies, comparing the presence or absence of any two while holding up to five characteristics constant.	000 0123
CULTCOMP (remote access)	Compares two cultures with data from Murdock's *Ethnographic Atlas.*	000 0124
CULTPIK (remote access)	Identifies cultures which satisfy a selected set of characteristics.	000 0125
TEXTOR (remote access)	Reproduces the dichotomies for the finished characteristics of 400 cultures, with the option of seeing the major categories and selected subdivisions.	000 0126
TEX-CODE (remote access)	Forty-four major divisions of the finished characteristics of 400 cultures are printed with the option of detailed information for selected portions.	000 0127
BEEFDP	Library of data processing subroutines designed to enhance the commercial-processing capabilities of FORTRAN.	000 0053
BMD	Package of programs for basic data processing and subsequent statistical analysis for researchers and scientists.	000 0055

Program Name	Description	EIN Number
LP1107	Generalized program with mathematical control language for the solution of linear programming problems using the dual or simplex algorithm, or both.	000 0056
PERT	System to provide integrated time and cost planning of research and development programs using a "work package" concept of costing.	000 0057
BELOW	Program to assist political reapportionment using procedures representative of the methods employed by legislatures. Provision is made for weighted combinations of population equality, compactness, and political conformance criterion in reapportioning decisions.	000 0072
ZORILLA	Algorithm for the optimization of a quadratic form subject to linear restraints.	000 0077
MOUFLON	System for model building in multiple linear regression. The user can choose up to 4 methods of optimizing: Hocking and Leslie's use of the C statistic; forward selection; sequential deletion, and stepwise regression.	000 0078
SCHEDULE	Program to aid in master schedule building and sectioning of the student-scheduling problem.	000 0090
AES106	Package of double-precision subroutines for vector and matrix manipulation.	000 0091
UOM32	Program to score objective exams with provision for analysis of questions.	000 0095
UOM4	Computes a Spearman rank-order correlation and other correlation statistics.	000 0096
UOM87	Program to sum selectively weighted variables.	000 0097
Marquette University	IBM 7040 at Marquette University is available for use, possibly without charge.	000 0100
Kiewit Computation Center	The time-sharing facility of the GE-635 at Dartmouth College is available on a limited basis.	000 0101
SUMSCRDS	Program to calculate the mean, sum, standard deviation, and number of nonmissing observations for an individual variable.	000 0106
REGAN1	Program for general multiple regression analysis, computing the Pearson product-moment correlation matrix and other statistical measures.	000 0107
MISREGN	Program for multiple linear regressions with provision for missing data.	000 0110
LPLOT	Subroutine for producing a plot of up to eight ordinate arrays versus one abscissa array using the line printer.	000 0112

EDUCOM

4 May 1971

MEMORANDUM

TO: Institutional Representatives and
Technical Representatives

FROM: John C. LeGates

CONCERNING: Donated Computer Time

The Educational Information Network (EIN) has received a donation of significant computational resources from Educational Testing Service at Princeton, New Jersey, for use by EIN members. Several institutions, selected on a first-come, first-serve basis, will be alloted a grant for use of ETS programs available through EIN. These programs are listed below. Further information on these programs can be obtained in the *EIN Software Catalog*.

The ETS facility operates an IBM 360/65 with OS/MVT and HASP. Programs at ETS can be accessed remotely via the following terminals: IBM 2780, 1130, 360/20 submodels 2 and 5, 360/25, 360/30, 360/40, and 360/50. Data sets must be compatible with the standard Bell System, voice-grade, 2400-baud set.

Interested persons are directed to have the EIN Technical Representative at their institution contact Mr. John LeGates, the Executive Director of EIN.

EIN Number	*Title*
000 0060	Matching Factor Solutions (MATCHFS)
000 0061	Matrix Decomposition for Points of View Analysis (MATDEC)
000 0062	Analysis of Change-over Experiments (ZFE—03; ZFE—04)
000 0063	Multivariate Analysis of Variance (MANOVA)
000 0065	Factor Analysis by Direct "Oblimin" Method (OBLIMIN)
000 0066	Unrestricted Maximum Likelihood Factor Analysis (UMLFA)
000 0068	Nonmetric Multidimensional Scaling (KRUSKAL)
000 0070	Multidimensional Scalogram Analysis (MSA—I)
000 0087	Minres Method of Factor Analysis (MINRES)
000 0113	Smallest Space Analysis (SSA—1)

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Summer 1971 EDUCOM *Bulletin* Volume 6, Number 1

EIN DATA/JOHN LEGATES/EIN DATA/EIN DATA/EIN DATA

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EIN Data

Educational Testing Service and the Educational Information Network are cooperating in an experiment to provide ETS resources through the EIN network. Access will be permitted free of charge to certain ETS programs for a trial. Several institutions, selected on a first-come, first-serve basis, will be allowed limited remote access during the 8-12 p.m. shift from June 1 through September 1. Further information will be announced via press release. Interested persons are directed to have the EIN Technical Representative at their institution contact Mr. John LeGates, the Executive Director of EIN.

EIN is pleased to welcome two new members to the Network. These are Oberlin College in Oberlin, Ohio, and New York University. We look forward to their participation.

Since the last edition of the EDUCOM Bulletin, the following programs have been added to the EIN Software Catalog:

Program Name	Description	EIN Number
CalComp	The CalComp plot routines are a series of subroutines used to obtain graphic output. They provide for scale, line, symbol, axis, and character manipulation.	000 0052
MFS	Program to compare the similarity of two factor solution matrices by two methods. One is to rotate the matrices orthogonally until corresponding factors are as similar as possible. The other is to rotate a matrix orthogonally to a specified target matrix.	000 0060
MATDEC	Decomposes a rectangular matrix to eigenvalues and eigenvectors as a first step to an individual differences model for multidimensional scaling.	000 0061
ZFE-03	Program to analyze effects of treatments with allowance for carry-over from previous treatments and tests for the significance of carry-over. The class of designs covered is latin squares and Youden rectangles.	000 0062
MANOVA	Performs univariate and multivariate analysis of variance, covariance, and regression.	000 0063
KRUSKAL	Latest version of Kruskal's multidimensional scaling program.	000 0068
PLOT	Flexible plot routines intended for calling by a FORTRAN program.	000 0069
MSA-I	Program to map variable types onto an Euclidean space with minimum dimensionality (also called multidimensional scalogram analysis).	000 0070
MSA	Performs multiple scalogram analysis.	000 0074
Information Retrieval Services	Service providing current awareness searches and retrospective searches in the fields of chemistry, biology, biochemistry, nuclear sciences, educational research, and engineering.	000 0099
TEXT 360	A text-processing system with data-entry, data-updating, and page-formatting capabilities.	000 0079
SYMAP	Graphic display program for producing contour,	000 0080

Program Name	Description	EIN Number
	conformant, and proximal maps on line printers.	
MPS	Mathematical programming system handling linear programming and separable programming problems.	000 0093
NYBMUL	Performs an exact least squares analysis of variance and covariance for any crossed and/or nested design. May also be used for regression analysis.	000 0094
OLS (remote access)	Interactive system for mathematical analysis of real and complex numbers and vectors. Operators include sine, cosine, logarithm, and exponentiation. Results can be displayed numerically or graphically.	000 0108
BMD	Package of statistical programs covering the areas of Description and Tabulation, Multivariate, Regression, Variance, Covariance, Contingency, and Time Series Analysis.	000 0132
GPSS	Transaction-oriented language for conducting simulation experiments and evaluations.	000 0133
CSMP	Simulates a continuous system, solving problems expressed as systems of differential equations or analog block diagrams. Handles non-linear and time-variant problems.	000 0134
TRANSPRT	Using primal-dual transportation algorithm, program minimizes total shipping cost for single commodity. Applicable to broader scheduling problems.	000 0135
RJE (remote access)	Describes the Penn. State Univ. Remote Job Entry System.	000 0102
Vogelback Computing Fac. (remote access)	Describes the facilities available at Vogelback Computing Center, Northwestern University.	000 0103
MERC (remote access)	Describes the facilities available at the Middle Atlantic Educational and Research Center.	000 0104
SSA-1	Program to find the smallest Euclidean space for a configuration of points using a nonmetric method. The program determines a set of coordinates such that the distance from them is a monotonic function of the order of the inequalities among pairs of points.	000 0113
TARSIER	Programmed method for the fitting of nonlinear regression functions using a modified Newton-Gauss method.	000 0128

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EIN Data

The fall of 1971 will mark a significant milestone in the history of EIN, although at this time the nature of that milestone is unclear. The grant from USOE and NSF under which EIN has operated will be coming to a close. EDUCOM is currently evaluating several options including seeking alternate funds, modifying the operation, or discontinuing it. The decision or decisions will be announced shortly.

An additional source of information about EIN programs is now available in the form of the JUG *Catalog*. This *Catalog* lists major programs from each of the manufacturers' user groups and from EIN. It represents a step forward in the effort to have a central source of information about computing resources.

The *Proceedings* of the main panel of the EDUCOM Fall Conference in Atlanta, chaired by Mr. LeGates and focusing on educational computer networks, will be available this fall. They are appearing in the September issue of *Behavioral Science*. Reprints are available from the Princeton Office of EDUCOM.

EIN is pleased to welcome the following institutions to its membership and looks forward to the contributions they will make.

The University of Alberta
Oberlin College
Principia College
Wilkes College

New programs listed in the EIN *Catalog* are the following.

Program Name	Description	EIN Number
DISCRIM2	Performs a Rao constellation and distance analysis (multiple discriminant analysis), determining linear combinations of variates from several groups which maximize the ratio of between-group variability to within-group variability.	000 0067
KRUSCAL	Implements multidimensional scaling to optimize goodness of fit to a nonmetric hypothesis.	000 0075
STUDENTT	Computes t statistics and associated probability levels to test equality of means of two groups. Optional features include transgeneration of variables, variable-variable or partitioned variable grouping, and computation of F statistic and associated probability levels to test equality of group variance.	000 0129
UMST500	Performs correlation analysis followed by multiple linear regression. Optional output includes correlation matrix, cross-product, and covariance matrices and their inverses, means, standard deviations, standard errors, t statistics and back solution. Variables can be transformed. Program does not handle missing data.	000 0130
HRDMIN	Inverts ill-behaved matrices to specified degree of accuracy using Hotelling's and Bodewig's iterative method.	000 0131
UMST520	Computes chi-square criterion on two-way frequency tables. Optional output includes row and column sums and expected frequencies.	000 0137
UMST530	Computes Pearsonian product-moment correlations on all pairwise combinations of up to 130 variables with provisions for missing data.	000 0138
UMST540	Ranks input data, then computes selected rank-order statistics including Kruskal-Wallis one-way analysis of variance, Spearman rank correlation, Kendall rank	000 0139

Program Name	Description	EIN Number
	correlation, and Kendall coefficient of concordance.	
UMST550	Performs correlation analysis followed by orthogonal factor analysis. Input may be raw data, correlation matrix, or orthogonal factor matrix. Raw variables can be transformed. Output includes various statistics, indices, and matrices.	000 0141
UMST560	Fits polynomials up to specified degree to input data (least square curve fittings). Data may be weighted. Coefficients and a graph of the polynomial may be output.	000 0142
UMST570	Performs multivariate analysis of variance and/or covariance. Data can be transformed. Analysis can be performed on selected variates.	000 0143
UMST580	Performs stepwise linear regression on up to 80 independent and 25 dependent variables. Variables can be weighted or transformed. Output includes regression and correlation coefficients.	000 0144
UMST590	Generates a bivariate frequency distribution (cross-tabulation) for pairs of variables. Data may be transformed and plotted. Output statistics include chi square and various nonparametric correlation coefficients, such as tau, z, and gamma.	000 0145
UMST600	Provides descriptive statistics on up to 999 variables, including mean, variance, standard deviation, and moments (to fourth moment).	000 0146
UMST620	Computes a frequency distribution of two variables over specified intervals. Input consists of a contingency table. Chi square, the marginal sums of the calculated frequencies, and the expected frequencies may be output.	000 0147
UMST630	Estimates the coefficients of a multiple regression model or a simultaneous equation model. Estimation techniques available are ordinary least squares, two stage least squares and limited information maximum likelihood estimate. Input may be of variable format, and a transformation routine is provided. Output includes various correlation statistics and matrices.	000 0149
Catholic Univ. Computer Center (remote access)	The Catholic University of America is making its PDP-10 system available, in either a timesharing or batch-processing mode. Additional equipment includes a disk, tape drives, and a CalComp plotter.	000 0150

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EIN is pleased to welcome two new universities into its membership. These are the University of Alaska and the State University of New York at Albany. We look forward to the contribution they will make to the networking community.

The grants from NSF and USOE which have supported EIN over the last three years are coming to an end. As a result, EIN will continue its work on a reduced budget, and with a slightly modified orientation. New supplements and updates will appear at less frequent intervals and will be smaller. They will reflect an increasing emphasis on programs, systems, and facilities which can be reached via network connection.

A survey has been conducted by means of an extensive questionnaire concerning the effect that EIN has had during its three years of existence. Information was gathered concerning not only events, but also attitudes, feelings, expectations, and hopes for the future. The results of this questionnaire will be mailed to those who filled them out, and an article based on it will be published sometime in the spring.

As a result of our reduced activity, we regretfully have no list of new programs for this issue.

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Membership in EIN has taken a quantum jump with the acceptance of nine new members. Eighty-eight institutions are presently members of EIN. The new EIN members are:

Institution	*Technical Representative*
Fort Lauderdale University	Mr. Daniel Mooney
Louisiana State University	Dr. Paul Murrill
Memphis State University	Dr. David Vaught
Michigan Technological University	Mr. T. S. Johnston
University of Saskatchewan	Mr. Bernard Molaro
University of South Carolina	Dr. William Eccles
U.S. Military Academy at West Point	Col. William Luebbert
U.S. Naval Academy	Mr. A. E. Conord
Youngstown State University	Dr. Ronald Jonas

As noted in the previous EIN Data column, EIN has entered a period of reduced activity. Supplements and updates will be published every other month, with Supplement 16 scheduled for appearance at the end of March. Programs contained in Supplement 16 include the following:

Name	**Description**	**EIN Number**
MX2	Calculates the solubility of the salt MX2 as a function of pH.	000 0150
DIBASIC	Extracts ionization constants for a dibasic acid from titration data.	000 0151
ACCO01	Program to compute weekly payrolls in accounting course problem illustrations.	000 0152
TURNOVR	Computes a statistical control chart for indicating the presence of new causes of employee turnover.	000 0153
———	Package of 11 subroutines which compute some or all eigenvalues and/or eigenvectors of a real symmetric or complex Hermitian matrix.	000 0155
WASH. STATE UNIV.	Washington State University is making its IBM 360/65 available, in either batch-processing, remote job entry, or conversational mode. Additional equipment includes a data cell, disks, tape drives, and a CalComp plotter.	000 0145